INDIAN TARIFF BOARD

Enquiry regarding the Grant of Protection

TO THE

MAGNESIUM CHLORIDE INDUSTRY

EVIDENCE TENDERED BY THE

APPLICANT FOR PROTECTION.

(The Pioneer Magnesia Works.)

CALCUTTA : GOVERNMENT OF INDIA
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INDEX.

Press Communique.

In a communiqué dated the 17th April 1924, the Tariff Board outlined the procedure they had decided to adopt in their enquiries into the industries referred to them in the Resolution of the Government of India in the Commerce Department No. 38-T., dated the 10th April 1924. The first stage was to obtain the evidence of the applicants for protection, and the second to publish this evidence —whether written or oral—so that all interested might give their opinions after they had had an opportunity of considering the case put forward. The evidence tendered by the applicants for protection in the magnesium chloride industry has now been published and copies may be obtained from the Manager, Central Publication Branch, 8, Hastings Street, Calcutta, price ten annas.

2. In the case of magnesium chloride, only one firm—the Pioneer Magnesia Works, Bombay, has applied for protection. The reasons which are held to justify the proposal have been fully developed in a memorial addressed to the Government of India, and in the replies to the Board's questionnaire. The firm have been unable hitherto to depúte a representative for oral examination, but the written evidence contains a full statement of the case. The applicants consider that a protective duty of 200 per cent. *ad valorem* will be necessary if they are to complete successfully with the magnesium chloride imported from Germany.

3. The Board will be glad to receive written representations from all Public Bodies, Associations, firms or persons who desire to be heard regarding the grant of protection to the magnesium chloride industry.

Oral evidence will be taken as follows:—

At Calcutta, between the 21st August and the 6th September.

At Bombay, between the 9th and the 30th September.

At Madras, between the 1st and the 14th November.

At Rangoon, between the 19th November and the 2nd December.

It is necessary that those who desire to supplement their written representations by oral evidence should inform the Board with the least possible delay, so that the dates for taking evidence may be definitely fixed. This is particularly important for those who desire to be examined at Calcutta, where oral evidence will first be taken. The Board will leave Simla on the 29th July and, after visiting Dehra Dun, Lucknow and Katni, will arrive at Calcutta on the 10th August. The following dates have been fixed by the Board as the latest dates for receiving written representations or requests for taking oral evidence:—

Requests for oral examination at Calcutta	12th August.
Submission of written representations by those who desire to be examined orally at Calcutta	19th August.

Requests for oral examination at Bombay	22nd August.
Submission of written representations by those who desire to be examined orally at Bombay	1st September.
All other written representations . .	30th September.

The programme for oral examination at Madras and Rangoon will be arranged later. All requests for oral examinations should be addressed to the Secretary to the Board, No. 1, Council House Street, Calcutta, and should be despatched so as to arrive on or after the 1st August, the date on which the Board's office will open at Calcutta.

THE MAGNESIUM CHLORIDE INDUSTRY.

A.—QUESTIONNAIRE FOR APPLICANTS FOR PROTECTION.

I.—Introductory.

1. When was the firm which you represent established? Is it a public or private registered Company, or is it an unregistered firm?

2. To what extent is the capital invested in your firm held by Indians? How many Indians are Directors? How many Indians (if any) form part of the superior management?

3. Does your firm undertake the manufacture of Magnesium Chloride only, or of other products as well? Please enumerate these other products (if any).

4. At what date did your Works commence to manufacture?

5. What is the full capacity of your Works as at present equipped for the manufacture of Magnesium Chloride?

6. What has been the actual output of the Works for each year since manufacture commenced?

7. Where are your Works situated? Do you consider it is advantageously situated in respect of—

(*a*) vicinity to the areas from which your principal raw materials are drawn;

(*b*) vicinity to the coalfields or other sources of power or fuel;

(*c*) vicinity to an important market;

(*d*) other considerations, such as the existence of an abundant labour supply?

What do you consider the most important factor in selecting the site of a Works for the manufacture of Magnesium Chloride in India?

8. Do you consider that your Magnesium Chloride is equal in quality and appearance to imported Magnesium Chloride? Does your Magnesium Chloride command the same price in competitive markets as imported Magnesium Chloride? If not, to what causes do you ascribe the lower price of the Indian product?

9. For what purpose or purposes is your product used in India?

10. Is the production of Magnesium Chloride at your Works limited to certain months of the year? If so, please explain the reason, and state whether the fact contributes to increase your cost of production as compared with the cost in other countries.

II.—Raw Materials.

11. What are the raw materials used in your Works?

12. What are your annual requirements of raw materials according to the rate of output equivalent to the full capacity of the plant?

13. What quantity of each of the raw materials is required for the production of one ton of Magnesium Chloride ?

14. From what area or areas does the factory draw its main supplies of the raw materials, and at what distance from the factory are they situated ? If possible a map should be given showing the site of the Works and the areas from which supplies are drawn.

15. How is the raw material collected and by what means is it transported from the source of supply to the Works ? If more than one means of transportation is employed, specify the distance covered by each such means.

16. What royalty (if any) per ton for raw materials is payable to Government or to private persons ?

17. Please give the cost per ton delivered at the Works of the principal raw material (or materials) for the years 1916, 1918, 1921 and 1923, divided under the following heads : —

(1) Royalty (if any).

(2) Labour employed on extraction and collection.

(3) Freight from the source of supply to the Works.

(4) Miscellaneous charges.

18. What are the terms of your concession (or concessions) for the raw material ? (A copy of the lease or other document in which the concession is embodied should be given). Do you consider these terms favourable ? If not, in what respect do you consider them unfavourable ?

19. Do you find it necessary to import any raw materials ? If so, please state from which countries you import them, and at what prices.

20. Have you to use any chemicals in the processes of your manufacture ? If you do, please state the quantities required per ton of Magnesium Chloride.

21. Do you get any special freight rate by sea, river or rail for your raw materials ? Do you consider you are at any disadvantage in this respect ?

III.—Labour.

22. Do the processes of manufacture require much expert supervision involving the employment of skilled labour imported from abroad ?

23. What number of imported labourers are employed at present, and what would be the number required if the factory were worked to full capacity ?

24. What progress has been made since the factory was established in the substitution of Indian for imported labour ? Is it anticipated that eventually the employment of imported labour will be unnecessary ? What facilities are given to Indian workmen to acquire training in skilled work or for training apprentices ?

25. How do the rates of wages paid to imported workmen compare with the rates paid for Similar work in other countries ?

26. What is the total number of Indian workmen employed, and what are the average rates of wages of the different classes ?

27. Please give for the years 1916, 1918, 1921 and 1923 :—

(*a*) the total wages bill for Indian labour at the Works.

(*b*) the average wages per man in the different classes.

The increases in the rates of wages should be stated, and the dates when they were given.

28. Is the Indian labour force sufficient ? Is it drawn from the vicinity of the factory, or from other parts of India ?

29. Has it been found that the Indian labourer improves with training ? How does his efficiency compare with that of workmen in Western countries employed on similar work ?

30. What arrangements have you made for housing your labour and for promoting its welfare in other directions ?

IV.—Power (including fuel).

31. Is the power used in the factory derived from electricity, or steam, or from some other source ?

32. If steam power is used, is coal the fuel employed ? If not, what is the fuel ? Is the latter available in sufficient quantities ?

33. What is the total quantity of fuel required per unit of output, whether for power production or for other purposes ?

34. From what distance is the fuel brought, and what is the free-on-truck price in the case of coal, and in the case of other fuel at the source of supply ? And what is the cost of transport per ton in each case ? If fuel is purchased locally, what is the price per ton delivered at the Works ?

35. Do you own or control your own sources of supply of fuel ? If so, how many years supply have you of the kind of fuel used by you ?

36. If your fuel is wood, have you obtained any concession from the Government or other person ? What is the royalty payable, and what are the conditions of the concession ? (Supply a copy of your concession).

V.—Market.

37. What is the total Indian production of Magnesium Chloride so far as it can be ascertained or estimated for the following years :—

1916.
1917.
1918.
1919.
1920.
1921.
1922.
1923.

38. What do you estimate is the total Indian demand for Magnesium Chloride ?

39. Is it likely that the Indian demand will substantially increase in the near future ? If so, what are the reasons for your belief ?

40. In what parts of India are your principal markets situated, and what are the distances which separate them from the Works ?

41. Are there any markets in India in which, owing to their distance from the ports, you are more easily able to compete against the foreign manufacturer ? If so, please state which these markets are, and the approximate demand in each.

42. Do you consider that the export of Magnesium Chloride from India to any foreign countries is probable ? If so, to what countries ? Can you form any estimate of the quantities which India might eventually be able to export and which foreign markets will consume ?

VI.—Foreign Competition.

43. Which are the foreign countries from which competition in the Indian markets is keenest ?

44. From what raw materials is the Magnesium Chloride made which is imported into India and competes with your product ?

45. Do the conditions of manufacture in India differ materially from those adopted in competing countries ? If so, what are the important differences ?

46. Have the conditions in India led you to adopt a process of manufacture different from those adopted in the chief competing country ? Are the latter attended by the production of bye-products tending to reduce the cost of manufacture ? Do you consider that the foreign manufacturer has an advantage in this respect ?

47. Please state—

(*i*) The prices at which imported paper has entered the country and been sold during 1916, 1918, 1921 and 1923.

(*ii*) The prices realised by you in each year since manufacture commenced.

If possible the f. o. b. price (in sterling) of imported Magnesium Chloride should be given and the following items shown separately :—

Freight.

Insurance and trade charges.

Customs duty.

Landing charges.

If this is not possible, then state the c. i. f. price *plus* Customs duty and Landing charges.

48. From what sources is information obtainable as to the prices at which imported Magnesium Chloride enters the country ? How far do you consider the information obtained from these sources reliable ?

49. Have you any reason to suppose that prices at which foreign producers sell for export to India are unremunerative, *i.e.*, below the cost of production, or do they leave only a small margin of profit to the producer ? If so, please state fully your reasons and the evidence on which you rely.

50. In which of the Indian markets is foreign competition keenest ?

51. To what causes do you attribute the low prices at which foreign Magnesium Chloride has entered India since the war ? How far do you consider these causes permanent or temporary ?

52. Please compare the freight you have to pay to reach your markets in India with the total freights—sea and rail—payable on imports to the same markets.

53. Compare the Railway freight paid by importers from the ports to selected up-country markets and the Railway freights paid on the produce of your Works to the same markets.

N.B.—What is desired is concrete instances giving the name of the port, the names of the up-country station, the distances, rates per maund per mile, etc.

54. Have any instances recently come to your notice in which Continental Magnesium Chloride has been re-exported from the United Kingdom as British manufacture ? If so, please give the evidence on which you rely, and state whether you ascribe the fact to depreciated exchanges or to other causes.

55. Do you consider that, as compared with the foreign manufacturer, the Indian manufacturer is at a disadvantage in all or any of the following points—

(*a*) the cost of plant and machinery ;

(*b*) the cost of expert labour ;

(*c*) the cost or efficiency of ordinary labour ;

(*d*) the collection and transport of raw materials ;

(*e*) the cost of raw materials and consumable stores ;

(*f*) freights on finished goods ;

(*g*) the maintenance of stocks of spare parts ;

(*h*) customs duty on imported materials ;

(*i*) the raising of capital ;

Where possible, definite figures should be given, *e.g.*, comparing the cost of plant and machinery erected in India with the corresponding cost in Western countries, or comparing the wages of imported expert workmen in India with the wages they would draw in their own countries. If there are "seasonal" difficulties in connection with the collection and transport of the principal raw materials, these should be explained.

56. Which of the disadvantages mentioned in your answer to question 55 do you regard as permanent and which as temporary ? For what period, in your opinion, are the temporary disadvantages likely to operate ?

VII.—Equipment.

57. Do you consider that your works are sufficiently large as an economic unit of production to ensure economy ? What, in your opinion, is the smallest unit of production which can be operated economically under present-day conditions ?

58. Does the manufacture of Magnesium Cholride require the use of elaborate and expensive machinery ?

59. What percentage of your total capital outlay has been incurred on plant and machinery ?

60. Give a brief description of your plant and machinery, and the process of manufacture you have adopted.

61. Do you consider your machinery and other equipment, and also the processes of manufacture, sufficiently up-to-date and efficient to enable you to compete successfully against the foreign manufacturer ?

62. Have you, since 1916, adopted any new processes of manufacture, or have you installed new plant and machinery in replacement of, or in addition to, the old plant ? If so, give a brief description of them and state whether the results have fulfilled the expectations entertained.

63. What parts of the machinery, if any, are made in India ?

VIII.—Capital Account.

64. What is the block value of your property, as it stood in your books at the end of the last complete year for which figures are available, under the following heads—

(*a*) Leases and concessions.
(*b*) Lands.
(*c*) Buildings.
(*d*) Plant and Machinery.
(*e*) Other miscellaneous assets.

65. Do the figures given in answer to question 64 represent the actual cost of the various assets, or their value after depreciation has been written off ? In the latter case, please state the total amount written off for depreciation since manufacture commenced, and in the former case the total of the depreciation fund (if any) which has been accumulated.

66. Apart from any question of an increase in the replacement cost of plant and machinery due to a general rise in the price level, are the sums actually set aside for depreciation since manufacture commenced equal to,

greater than, or less than, the sums which ought to have been set aside according to the rates of depreciation which you consider suitable? (See Question 81).

67. What do you estimate would be the present-day cost under the heads (*a*) buildings, and (*b*) plant and machinery, of erecting a Works having the same output as your present Works? How does the figure compare with the block value of your present Works under the same heads, and would the operating cost of a new Works established now be greater or smaller than yours?

68. What is the total (*a*) authorized, (*b*) subscribed, (*c*) paid up capital of the Company? How is it divided between Preference, Ordinary and Deferred shares?

69. At what rate of interest is the dividend payable on the Preference shares? Are these shares entitled to cumulative dividends? If so, state the dates on which they were first entitled to rank for dividends, and whether any dividends are in arrears.

70. Under what conditions do the Deferred shares participate in the profits of the Company?

71. Please prepare a statement showing for each year since the establishment of the Company—

(*a*) The amount of the paid up share capital (Preference, Ordinary and Deferred) ranking for dividend,

(*b*) The actual amounts distributed as dividends on each class of capital, and

(*c*) The percentage on the paid up share capital of each class which the dividend represented.

72. What is the average rate of dividend on the Ordinary shares for the full period?

73. What is the amount of the debenture loans (if any) raised by the Company? At what dates were they issued, and what is the rate of interest payable? If any period has been fixed for the redemption of the debenture loan, it should be stated. Similarly, if a debenture sinking fund has been established, the annual rate of contribution should be given.

74. What is the amount of the Reserve Fund (if any) created by the Company? Has this amount been accumulated from surplus profits, or from other sources, *e.g.*, by the issue of shares at a premium?

75. What additional capital (if any) would it be necessary to raise in order to carry out any scheme of replacement or extension of plant which the Company contemplate?

IX.—Cost of Production.

The cost of production falls under two heads:—

(*a*) Works costs, and

(*b*) Overhead charges.

The latter head—overhead charges—includes :—

(*i*) Interest on working capital.

(*ii*) Depreciation.

(*iii*) Head office expenses and Agents' commission.

The head 'Works Cost' covers all other expenditure on the production of Magnesium Chloride. The dividends on share capital are not included in the cost of production, nor is the interest on debenture and other loans in so far as the sums so raised have been devoted to fixed capital expenditure.

(*a*) Works costs.

76. Please fill up the two Forms annexed to the questionnaire regarding Works Costs.

The following explanations may be useful :—

(*a*) The Board are anxious to have as full information as possible regarding the cost of production, but they recognise the difficulty which manufacturers may feel in disclosing to the public the details of their practice and their works costs. Great stress was laid on the importance of publicity in paragraph 303 of the Fiscal Commission's Report, and the Board also have explained the views they hold in paragraph 41 of their Third Report on the Grant of Protection to the Steel Industry. It rests with the manufacturers themselves to decide what information can be given publicly, and nothing will be published which the witness desires to be treated as confidential. At the same time, the Board cannot base their recommendations merely on confidential information. The publication of the details of the works costs of each firm may not be essential because the Board may be able, by comparison of the various figures submitted, to arrive at a standard or average figure for each item. But it is very desirable that the total of the works costs should be disclosed in all cases.

(*b*) In Form I the actual expenditure of the year under the various heads should be shown, whereas in Form II it is the cost per unit of output that is desired.

(*c*) The years for which figures have been asked for are 1916, 1918 1921 and 1923.

(*d*) The figure given against raw materials should be the cost delivered at the Works and will include the cost of all labour employed in collection or transport. The cost of such labour, therefore, is necessarily excluded from the item 'Labour' in the forms.

(*e*) If at any stage of the process of manufacture materials are recovered and can be used again, the credits taken for such recoveries should be entered in the forms, and the manner in which such credits are taken explained.

(*f*) In the Forms Power and Fuel are shown as one item, but it is preferable (if possible) that they should be shown separately.

77. Was the works cost increased in any of the years for which figures have been given owing to the fact that the Works were working at less than thier full capacity ? If so, which were the items principally affected ? To what extent would they probably have been reduced if a full output had been obtained ?

78. Do you regard the works cost of the last year for which figures have been given as abnormally high for any other reason ? If possible, furnish an estimate of the works cost for some future year on the assumption that—

(*a*) conditions are normal,

(*b*) an output is obtained equivalent to the full capacity of the plant.

79. Have you adopted a system of cost accounting ? If so, will you place before the Board, for examination and return, your cost sheets for the last complete year for which they have been prepared ?

80. Are you in a position to furnish the Board with information as to the works costs of Magnesium Chloride in any competing country for any year since the war ?

(*b*) OVERHEAD CHARGES.

(*i*) *Depreciation.*

81. What are the rates of depreciation allowed by the Income-tax authorities ? Do you consider that, in calculating the cost of production of Magnesium Chloride, these rates of depreciation are suitable ? If not, what rates do you suggest, and why ?

82. What is the sum required annually for depreciation at Income-tax rates on the total block account—

(*a*) if the assets are valued at cost,

(*b*) if the assets are taken at their value after deducting all depreciation written off up-to-date ?

The depreciation should be shown separately for :—

Buildings.

Plant and machinery in continuous operation.

Other plant and machinery.

Other assets.

If you consider that rates other than the Income-tax rates should be adopted, please calculate the sums required annually for depreciation at these rates also.

83. Taking the figures given by you in answer to question 67 as the present-day cost of the buildings and machinery required for a Works having the same output as your present Works, calculate the sum required annually for depreciation at Income-tax rates and at the rates, you consider should be adopted if you think the Income-tax rates are unsuitable.

84. Taking the total amount of depreciation to be written off according to the various methods given in questions 82 and 83, what is the incidence per ton of finished Magnesium Chloride according to the output equivalent to the full capacity of the plant ?

(ii) Working Capital.

85. What is the working capital which the Company requires according to the output equivalent to its full capacity ?

86. Is the Company able to provide all the working capital it requires from share and debenture capital, or is it necessary to borrow additional capital for this purpose ?

87. If additional working capital has to be borrowed, what is the amount borrowed and the rate of interest payable ?

88. Compare the working capital with the cost of one month's output (works cost only, excluding overhead charges).

89. What is the average value of the stocks of finished goods held by the Company ? What period normally elapses between production and payment ?

90. Does the Company find it necessary to hold large stocks of coal or raw materials ? If so, the average value of the stocks held should be stated.

(iii) Agents' Commission and Head Office expenses.

91. Has the Company a Head office other than the office of the local management ? Is it under the control of a firm of Managing Agents ?

92. If the answer to question 91 is in the affirmative, please state :—

(*i*) the annual amount of the Head office expenses

(*ii*) the Agents' commission.

93. How is the amount of the Agents' commission determined ?

94. What is the cost of :—

(*i*) Head office expenses

(*ii*) Agents' commission

per ton of your production according to the output equivalent to the full capacity of the plant ?

X.—MANUFACTURER'S PROFITS.

95. What rate of dividend do you consider to be a fair return on Ordinary and Deferred shares ?

96. If your Company contemplated the establishment of a new Works, or the purchase of new machinery and other equipment for the existing Works—whether by way of extension or replacement—what rates of interest do you consider it would be necessary to offer on (*a*) Preference shares, and (*b*) Debentures in order to attract capital, assuming that the profits made in the industry showed a substantial margin after providing the interest on the existing shares or debentures ?

97. If it were decided to issue Ordinary shares, what do you consider would be the minimum probable return which would be likely to attract investors ?

98. What is the incidence per ton of Magnesium Chloride of :—

(*a*) the fair return on the Ordinary and Deferred shares as given in answer to question 95

(*b*) the full dividends on the paid up Preference shares

(*c*) the full interest on the debentures, in so far as the proceeds of the debentures have been devoted to fixed capital expenditure and not used as working capital ?

N.B.—The figure should be given on the output equivalent to the full capacity of the plant.

XI.—Claim for Protection.

99. In paragraph 97 of their Report, the Fiscal Commission laid down three conditions which in ordinary cases ought to be satisfied by industries claiming protection. Do you consider that those conditions are satisfied in the case of the Magnesium Chloride industry ? And in particular :—

A. Do you claim that the industry possesses natural advantages, such as an abundant supply of raw materials, cheap power, a sufficient supply of labour or a large home market ?

B. Do you claim that, without the help of protection, the industry is not likely to develop at all, or is not likely to develop so rapidly as is desirable in the interests of the country ?

C. Do you claim that the industry will eventually be able to face world competition without protection ?

These conditions have been approved by the Government of India and by the Legislative Assembly, and it is therefore of great importance to ascertain whether they are satisfied. If you consider that your industry fulfills these conditions, the reasons for your opinion should be fully explained.

100. Do you claim that your industry satisfies either or both of the conditions mentioned in paragraph 98 of the Fiscal Commission's Report, *viz.*—

(*a*) That the industry is one in which the advantages of large scale production can be achieved, and that increasing output would mean increasing economy of production ?

(*b*) That it is probable that in course of time the whole needs of the country could be supplied by the home production ?

101. Do you consider that your industry is of importance on national grounds and therefore deserves protection apart from economic considerations ?

102. Do you consider that there are any features of the industry which make it peculiarly suitable to Indian economic conditions ?

103. What special measures (if any) do you suggest to safeguard your industry against underselling by reason of .—

(*a*) depreciated exchanges

(*b*) subsidized freights

(*c*) any cause other than a reduction in the foreign cost ?

104. What is the amount of protection the industry receives at present owing to :—

(*a*) the existing Customs duties,

(*b*) transport charges between the country of production and the port of entry, *i.e.*, freight, insurance, trade charges and landing charges ?

105. What is the amount of the protection which you consider necessary ?

N.B.—The reasons for proposing the particular rate recommended should be explained.

106. Do you not think that consumers of Magnesium Chloride will object to protection being granted to your industry on the ground that it will raise their cost of production and also entail a sacrifice on the final consumers ?

FORM I.

Statement showing the total expenditure incurred on the production of Magnesium Chloride during certain years.

(See question 76.)

———	1916.	1918.	1921.	1923.
(1) Raw materials				
(2) Works labour				
(3) Power and fuel				
(4) Ordinary current repairs and maintenance of buildings, plant and machinery.				
(5) General services, supervision and local office charges.				
(6) Miscellaneous, *e.g.*, rent, municipal taxes, insurance, etc.				
(7) Any other single item not enumerated above which amounts to 5 per cent. or more of the total expenditure.				
Total				
Total production of Magnesium Chloride for the year.				

FORM II.

Statement showing the works cost per ton of Magnesium Chloride.

(See question 76.)

——	1916.	1918.	1921.	1923.
(1) Raw materials				
(2) Works labour				
(3) Power and fuel				
(4) Ordinary current repairs and maintenance of buildings, plant and machinery.				
(5) General services, supervision and local office charges.				
(6) Miscellaneous, *e.g.*, rent, municipal taxes, insurance, etc.				
(7) Any other single item not enumerated above which amounts to 5 per cent. or more of the total expenditure.				
Total				
Credit for Materials recovered (if any) ..				
Nett total ..				
Total production Magnesium Chloride for the year.				

M. 5 T.B.—27-5-24.—550—C1PS

The Pioneer Magnesia Works, Bombay.

WRITTEN.

Statement I.—Copy of letter from the Pioneer Magnesia Works, dated 12th October, 1923, to the Government of India, Department of Commerce.

We have the honour to forward herewith our statement of the reasons why protection should be extended to this Industry, for submission to the Tariff Board which is now sitting.

We may add that the Director of Industries as well as the Bombay Salt Department have been connected with this Industry ever since its inception and we have reason to believe that they will be only too pleased to support our case, being directly concerned and interested in our well-being as will be noticed from copy of our Draft Agreement with Government and also a letter received from the Deputy Commissioner of Salt & Excise N. D. in this connection dated Ahmedabad 13th September 1923.

Begging the favor of a line in reply at convenience.

Enclosure 1.

Memorandum regarding Magnesium Chloride Industry for the Tariff Board.

Statement of reasons why protection should be extended to this Industry.

What is Magnesium Chloride.

Magnesium Chloride is one of five most important and necessary ingredients required for cloth sizing in textile Mills. All warp yarn before being taken to the loom shed generally requires to be passed through a size mixture in order to keep the thread pliable and soft and to enable it to stand the wear and tear better. For this purpose very light size is used, but in cases where coarse cloth is woven or it is desired to give more weight, as much as 100 to 125 per cent. size is often added.

2. The principal sizing substances most in vogue are :—

(*a*) Adhesive or starchy materials like wheat flour, maize starch, or farina.

(*b*) Weight-giving products like China Clay, French Chalk, etc.

(*c*) Fatty or softening ingredients like oils-beef and mutton tallows, glycerine, soap, etc.

(*d*) Zinc chloride to prevent mildew or fungus growths.

(*e*) Deliquescent agents like Magnesium or Calcium Chloride or even Common Salt in some cases, to keep the thread moist. But magnesium chloride being hygroscopic in character and possessing also weight giving property, is by far the most suitable and desirable sizing medium hitherto known.

Use.

3. The use of Magnesium Chloride in India varies according to the texture of the cloth woven, and the dryness or humidity in the atmosphere, also to a

certain extent depending upon the other component parts of the size mixture used and the idiosyncracy of the Weaving Master.

Probable Consumption.

Roughly speaking the consumption varies from about 5 tons per 100 looms per annum for Mills at Ahmedabad and in other parts of India, to about half that quantity in Bombay, and taking the total No. of looms at 1,35,000 the approximate annual average consumption in India may be set down at from 3,500 to 4,000 tons at the outside, counting at the rate of about 3 tons per 100 looms per annum.

History.

4. Before the Great European War, Magnesium Chloride used to be a monopoly of Germany and the average import price ruled in the vicinity of about Rs. 3/8 per cwt. c.i.f. Bombay.

5. There was a customs duty of 2½ per cent. *ad valorem* payable by merchants and other importers, exemption being granted to Mills directly importing for their own *bona fide* use.

According to present tariffs however both Mills, and merchants have to pay a uniform 15 per cent. *ad valorem* duty.

German production.

6. At Stassfurt in Germany there are large valuable deposits of a mineral called *Carnallite*, which is a double-chloride of Potassium and Magnesium with traces of Bromides and Iodides. Magnesium Chloride forms by far the greater portion of this carnallite and *must be eliminated* before recovering the potassium bromides and iodides, and thus it could naturally be exported from Germany as a bye-product *at very little cost*. Besides it was usually shipped from there as *bottom cargo* at extremely low freight rates, whereas the indigenous product has to bear considerable freight charges and cannot claim any sea-board to facilitate its transport.

Great Britain as a rule does not produce or export much Magnesium Chloride. It rather imports all its own requirements from Germany, not only for *bonâ fide* consumption but for also commercial re-export to India and other places. Besides textiles, Great Britain largely uses the Magnesium Chloride for making Magnesia cements and manufacture of flooring tiles, etc., though in India this is a negligible quantity, and only textile Mills are so far known to be the principal users.

Origin of the Magnesium Chloride Industry in India.

7. As soon as the War started and German supplies were cut off, prices of Magnesium Chloride like every other commodity began to soar high, and a stimulus was thereby given to the investigation of local resources.

Attention was drawn in the year 1915 to the almost unlimited supply of *Bitterns* (which is a term applied to the residual mother liquor left in the salt pans after the sodium chloride or common salt is formed from brine at the bottom) at Kharaghoda, where the Pritchard Salt works of the Bombay Government are situated, and where about 40 lacs of Bengal Maunds of what is known as the Badagra cube-salt is annually produced departmentally.

8. Kharaghoda forms part of the Desert of Cutch being 60 miles away from Ahmedabad and only 18 miles by rail from the important junction station of Viramgam, on the Bombay, Baroda and Central Indian Railway. The Gulf of Cutch about 60 miles further is supposed to be the source of all the brine water at Kharaghoda with which the sandy soil is saturated and this brine contains besides the sodium chloride a few other salts and is particularly rich in Magnesium Chloride which is usually found in the ratio of 1 to 12, in the Kharaghoda Agurs. In the ordinary working season from October to May, Bitterns are let off twice. On a very rough estimate, this supply would run to about 25,000 tons annually which could be easily turned into say 10 to 12,000 tons of Magnesium Chloride every year of the *best quality*, which is enough to supply the whole of India 3 or 4 times over. This is, not taking into account the adjoining salt works at Kuda—which are only 10 miles away from Kharaghoda as the crow flies—belonging to the Dhrangadra State, where also excellent Magnesium Chloride is produced in sufficient quantity in full competition with the Kharaghoda product.

India has thus vast untapped resources of this material and could very well afford to be thoroughly independent of foreign supplies and even to export any amount under favourable conditions. Besides it can give rise to many a new allied industry if proper support be given and means taken to protect it.

Beginning of the Pioneer Magnesia Works at Kharaghoda.

9. The Bombay Government first invited tenders in the year 1915 for the right to remove the Bitterns from the Kharaghoda Salt Works, with the result that one Mr. P. V. Mehd, M.A., B.Sc. (Assistant Professor of Chemistry at St. Xavier's College in Bombay) succeeded in obtaining the Contract from the Commissioner of Salt, Opium and Excise on Royalty payment of 8 annas per cwt. This was only for a few months, when fresh tenders were again invited for the year 1916, and each succeeding year thereafter, and a private Company formed in the name of the Pioneer Magnesia Works of Ahmedabad, consisting of the Hon'ble Sardar Rustom Jehangir, Vakil (Mill Owner and Merchant of Ahmedabad) and Messrs. B. S. Lalkaka, B.A., and P. V. Mehd, M.A., B.Sc., was started to run the contract. The Royalty payable was fixed at Rs. 1-8 per cwt., that being the highest rate offered to Government. This contract was renewable from year to year and from the 2nd year, the Company established its Factory at Kharaghoda and has been working there since, under the supervision of the Government Salt Department, and in close collaboration with the Director of Industries, Bombay, through whom the present new agreement with the Secretary of State for India has been negotiated. According to this Agreement, Government have now become direct participators under certain conditions in the Company's nett profits in place of the hitherto fixed Royalty of Rs. 1-8 a cwt., upon all the removals from Kharaghoda.

New Agreement. Substituting Government participation in Company's profit in place of fixed Royalty as hitherto.

Company's resources.

10. The Company have at their works, a trained chemist and an Engineer, besides other requisite staff they have also their offices at Ahmedabad and Bombay, both principal centres of the Mill Industry. Besides their representative goes round every year for canvassing orders from the rest of India, and to push the Company's sales. They have also a small Laboratory for conducting experiments and their chemist was sent for further study and investigation and to carry on certain Research work under Drs. Sudborough and Watson at the Indian Institute of Science at Bangalore.

11. The Pioneer Magnesia Works occupy an area of about 20,000 square yards leased from the Kharaghoda Salt authorities, on which are placed their Factories, Railway Siding, Office Bungalows, Work-men's chawls, and other Store rooms, besides a separate shed for making drums for packing their material. An up to date Motor Rail wagon with a 6-ton tank-attachment plies in the Working Season for bringing the Bitterns from the Agurs to the Works and large masonry reservoirs holding a thousand tons or more at a time made of stone-paving throughout, are constructed for storing their raw material. A good idea could be formed from the illustrations given in the small monograph on the Kharaghoda Industry published by the Company of which some spare copies are herein enclosed for the information of the members of the Tariff Board.

12. They have also a good financial backing and always have a large supply of several thousand drums ready to meet any demand.

Magnesium Chloride (Comparative analysis).

13. Their product has been analysed more than once, side by side with various samples taken out of German drums, under the supervision of Professor A. J. Turner, M.A., B.Sc., F.I.C., Government Chemist attached to the Industries' Department, and is in no way inferior in strength or quality to the best imported article. (*Vide* comparative analysis given.) Schedule A.

Exports.

In 1920, small trial consignments were also sent to certain firms in England. These were well received and showed every prospect of some firm offers being made, as could be seen from telegrams and letters exchanged on the Company's file, and but for the difficulty of shipping and heavy freight charges prevailing then, this might have resulted increasing a good export demand for the Company's goods.

14. The Company hopes when times improve, to again bid for foreign export.

15. Magnesium Chloride could also be used in tile-manufacture and for road watering as also for making Magnesia Cements, but these uses require to be considerably developed in India.

16. The Bombay Municipality did make some experiments for using this as a road-watering material of which the result is not fully known, and a certain tile Factory in Madras have also bought some wagons from the Company for their use. There has also been some demand though very little from Rice Mills for use as a grinding agent.

Bye-products.

17. Epsom Salt and Glauber Salts could be produced from the Kharaghoda Bitterns, but on account of the very small proportion of these salts in the original mother liquor and owing to the use of sulphuric acid and other more elaborate process, the cost becomes prohibitive and it cannot pay as a commercial proposition against like products manufactured in Bombay and elsewhere.

There is a slight trace of Bromine also in the Kharaghoda Bitterns and in 1918 Government on the advice of their technical expert made the Company put up a special experiment plant for the purpose of recovering the Bromine and manufacturing the Magnesium Chloride in a special way. The idea was dropped however, because Bromine which was considered a valuable adjunct for explosives in war time, was no longer needed so acutely after hostilities had ceased, and further the Company's own process of manufacture was acknowledged to be far more effective and economical in the end than the one which the Company were forced to experiment with at a cost of several thousand rupees which resulted in dead loss to them when the plant was subsequently scrapped.

This may, however, serve to show that in times of difficulty or when necessity arises in the event of a national emergency the Company's works may prove of invaluable aid and not be altogether devoid of interest from the Government point of view.

Refined salt.

18. The Pioneer Magnesia Works situated on the outskirts of the big salt works of Government at Kharaghoda have a particular facility for refining and turning out a more purified quality of sodium chloride from the ordinary Badagra Cube salt which is so much mixed with dirt and other impurities. They have therefore established a small plant for making Refined salt (also Table salt) which comes up in all respects to the imported Liverpool salt and could easily compete with the best Cheshire or Cerebos Salt if so desired. On the recommendation of the Director of Industries, numerous Military Dairies all over India have actually used the Company's product in place of the English Butter salt which they were importing.

19. It may be interesting to note here that Calcutta alone imports annually something like 4 to 5 lac tons, *i.e.*, about a crore of Bengal maunds of this refined salt in bulk from such places like Liverpool, Hamburg, Barcelona, Aden, and so forth, against which the Indian refined salt has to compete also. Of all places Bengal alone is used to this foreign salt to any large extent, and although the Company has been making serious efforts to popularise its use in places close by like Ahmedabad and Bombay, hitherto there has not been much encouragement nor demand in bulk except for the Calcutta market.

20. The sea freight on foreign salt from thousands of miles away, works out roughly at only 4 annas a maund (*i.e.*, less than Rs. 7 or Rs. 8 a ton) whereas from Kharaghoda to Calcutta even at concession rates, the Company has to bear as much as Rs. 1-12 a maund or nearly Rs. 45 to Rs. 50 a ton, other conditions being equal. Unless therefore things are radically changed, it is hopeless or impossible for the Indian Industry to stand on its own legs or to compete against the foreign rivalry. The same excise duty of Rs. 2-8 a maund prevails equally for both the indigenous as well as the imported salt.

21. This subject also requires careful and sympathetic consideration and provided suitable protection could be had, there is immense possibility for the local Industry to flourish, and take its proper place side by side with the similar imported product and in the case of this Company this would also materially tend to lower their cost of the Magnesium Chloride production, in as much as the same staff could supervise and attend to both the plants running side by side.

Comparative statement of Magnesium Chloride imported into Bombay and the quantity produced at Kharaghoda and sold by the Pioneer Magnesia Works.

FOREIGN IMPORTS. (*From official figures published in the* Bombay Gazette *Trade Returns.*)				KHARAGHODA FIGURES.			
				Production.			
Years ending 31st March.	Tons (about).	Value.	Average import price per cwt. exclusive of Duty and other charges.	Calendar year January to December.	Tons.	Sales Tons about.	Gross realisations.
		Rs.	Rs. A. P.				Rs.
1914-15 . .	2,705	3,00,570	5 8 9	1914 . .	Not started.		
1915-16 . .	3,563	9,33,075	13 15 0	1915 . .	Ditto.		
1916-17 . .	1,067	2,81,355	13 3 0	1916 . .	966	838	1,45,873
1917-18 . .	1,185	2,90,955	12 5 0	1917 . .	1,145	1,181	2,09,742
1918-19 . .	Not available.		..	1918 . .	1,845	1,920	4,27,816
1919-20 . .	848	2,27,337	13 6 6	1919 . .	1,822	1,648	4,01,206
1920-21 . .	2,929	8,39,210	14 4 0	1920 . .	1,477	1,173	2,55,825
1921-22 . .	2,330	4,49,680	9 10 0	1921 . .	851	1,099	2,03,255
1922-23 . .	2,716	2,93,594	5 6 6	1922 . .	1,353	735	1,03,897
TOTAL .	17,343	36,15,836					
1923-24.				1923.			
April . .	858	55,345	3 3 6	January to June . .	*Nil.*	198	20,295
May . .	623	37,737	3 0 0				
June . .	635	35,407	2 12 6				
TOTAL .	2,116	1,26,489		TOTAL .	9,459	8,792	17,67,819

N.B.—The following points have a particular bearing on the present question and *must be* carefully noted.

22. To the Kharaghoda figures must be added the rival figures of Production and Sale from the adjoining Salt works of Kuda in the Dhrangadhra territory. These are not exact but may be roughly put down at nothing less than about 500 tons per annum. These are likely to be exceeded considerably in future, because from next year the State has been granted permission and has made arrangements to manufacture several lakh maunds of Sodium Chloride in their own agurs in place of only 30,000 maunds to which they were restricted according to subsisting Treaty Rights with the Government of India.

23. It may further be noted that according to authentic official records quoted above, the proportion of Imports is almost 95 per cent. German

and 5 per cent. only from the rest of the World including Great Britain, as will be seen from the following detailed summary showing the quantities arrived in Bombay Port alone from various sources during the past 1½ years from January 1922 up to June 1923.

Sources of Import from	Tons (about).	Cwts.	Import value without Customs Duty and other sundry charges.	Average approximate price per cwt. without duty and other charges.	
				Rs. A. P.	
This is more or less the same origin, *i.e.*, Germany—					
United Kingdom. . .	113	2,263	28,417	12 9 0	For period from 1st January to 31st December 1922.
Germany	2,717	54,350	2,87,902	5 4 9	
Netherlands . . .	74	1,492	9,354	6 4 3	
Belgium	34	678	3,695	5 7 3	
TOTAL .	2,938	58,783	3,29,368	5 9 6	
United Kingdom . . .	83	1,662	13,197	8 0 0	For period from 1st January to 30th June 1923.
Germany	2,696	53,916	1,66,265	3 1 3	
Other countries . . .	15	298	902	3 0 0	
TOTAL .	2,794	55,876	1,80,364	3 3 6	

24. The disparity in ruling prices of stuff imported from United Kingdom as compared with Germany is very glaring and surprising, and shows that whereas Germany could send out at Rs. 5-4 in 1922 and at Rs. 3 in 1923 per cwt. Great Britain is nearly 2½ times dearer and cannot export at anything less than Rs. 8 in 1922 and Rs. 12-9 per cwt. in 1923.

Also Germany has a virtual monopoly of the Imports and has sent out 2,717 tons out of 2,938 tons in 1922, *i.e.*, 92½ per cent. of the trade and 2,696 tons out of 2,794 tons in 6 months alone of 1923 or 96 per cent. of the total imports.

25. That the present competition is sufficiently killing and ruinous to the local Indian industry may be judged from the separately given figures of actual costs of production incurred by the Pioneer Magnesia Works at Kharaghoda for the past 7 years of their existence. (*Vide* Schedule B.) This would show that whereas the Kharaghoda costs have remained more or less constant and could not possibly be reduced to any appreciable extent unless and until the other important necessary expenses like packing material or Railway freights and handling charges, Royalty, etc., radically changed, the German prices have been constantly going down and down with their tumbling exchange and even now it cannot be said that the bottom is touched.

26. Whereas the imported stuff sells on c.i.f. terms or in some cases at godown rates in Bombay, the Pioneer Magnesia Works deliver it free at Mills and accept Mill weights as against invoice weights in the other case. That means a material addition to the Company's costs. Besides the Company's packing is in sound galvanised drums, which means more money to them though the drum when empty is not without value to the purchaser. The prejudice, however, in favour of Germany is so strong that even though their packing is so inferior and it is a common experience to see drums half full if not totally empty sometimes, the first low cost is

everything and is enough temptation to the purchaser to prefer it to the local article however good.

27. This is the state of Competition when the Germans themselves are not yet established here or have come to trade in India after the War. But it is difficult to imagine what further cut-throat competition there may be in store for the Industry after they have once again established a firm footing as before in this country.

28. The German stuff moreover has an important advantage over the local industry in this way, that owing to Bombay being the first port of entry and the sea freights being necessarily lower than the Railway charges however cheap, they can afford to under-sell the indigenous product to some extent, whereas the Company could have no control over the Railway freights from Kharaghoda to Bombay and have to bear other heavy incidental and double handling charges.

It is small wonder, therefore, that in spite of the Company offering their goods at much below their intrinsic costs, not a single drum could be sold in Bombay for the past one year almost in face of the German distress goods knocking about and put on the market by nervous dealers. The Company's Factory is therefore per force shut down since last year, and though the expenses have been cut down to a minimum, certain unavoidable charges go on accumulating and only add to their burden of carrying over large stocks from which to make sales whenever a demand is visible. The present low prices of *between Re. 1 and Rs. 2 per cwt.* prevailing in Bombay are not enough to cover even the Railway freight and handling charges incurred by the Pioneer Magnesia Works on their Kharaghoda stuff, and so far as could be judged from the past nine months' working the Company is not even covering the expenses and stands to lose a substantial portion of its capital before the year is out.

Arguments in favour of Protection.

29. 1. *Natural advantages.*

(*a*) There is an abundance of raw material at Kharaghoda which annually goes to waste in such large quantities. This is exclusive of the immense rich supplies lying dormant at the adjoining Salt Works of Dhrangadhra and other untapped resources all over Kathiawar and in other parts of India. The following calculation roughly shows the estimated yield of Magnesium Chloride from Bitterns from the Pritchard Salt Works of Government at Kharaghoda alone.

$$\text{Pans. } 800 \times \text{Long } 250' \times \text{Broad } 100' \times \text{High } 10' = \text{Lac Bengal } 35 \text{ to } 40 \text{ Mds. of Salt annually} = \text{say } \frac{\text{Tons } 1,50,000}{12}$$

$$= \text{Tons } 12,000 \text{ of Bitterns} \times \text{Crops } 2 = \text{Tons of Bitterns } 24,000$$

This means at least about 10 to 12,000 tons of best Magnesium Chloride or three times the total requirements of India year after year.

Dhrangadhra if fully worked could yield much the same quantity, so there is absolutely no lack of raw material so far as the industry is concerned.

30. (*b*) So long as salt remains an integral part of vital human consumption and the Kharaghoda Agurs are not finally dismantled or abandoned, Magnesium Chloride will ever count as an important subsidiary bye-product and will continue to play its part provided, of course, the Mills do not also cease using it as a sizing ingredient as at present. Of this there is no immediate danger.

31. (*c*) *Transport.*—The Kharaghoda agurs are served with a net work of about 40 miles of Railway line throughout the Salt works, which no doubt helps the Company materially in bringing their raw Bitterns to the Factory, as promptly and economically as possible.

Further owing to the importance of the salt industry itself there is any amount of Railway facility for transporting the manufactured product direct from the Company's Railway siding to any part of India with the minimum of delay.

32. (*d*) *Labour.*—This is also cheap and plentiful at Kharaghoda and of a sort peculiarly adapted to this class of handling and work, for which the ordinary labourer would not do so easily. Magnesium Chloride being of a corrosive nature and the conditions of work at Kharaghoda rather peculiar and of a somewhat strenuous nature, an ordinary workman would soon run away and not be able to withstand the extremes of heat and cold and the blinding summer sandstorms. The "Agaria"—as the Agur labourer is called—who is bred and born in these parts is well adapted for this class of work and does it very efficiently.

33. (*e*) *Company's resources.*—The Company has the good fortune of possessing a wealthy Mill-owner and financier in Sardar Rustom J., Vakil of Ahmedabad, so there is no dearth of capital to meet any future developments as may be deemed necessary or expedient.

They have a well established office in Bombay working in conjunction with an influential Firm of good standing and reputation (Messrs. H. M. Mehta & Co. of 123, Esplanade Road, Fort, Bombay) with another Head office at Ahmedabad to look after the sales; besides they have a well trained chemist and an Engineer at the Works, and the Company's representative also visits different Mills all over India to canvas sales.

34. (*f*) The Company's product is well known and used by almost every Mill in India. The packing is in sound galvanised drums. Their quality also is quite up to the mark and the analysis compares very favourably with the best imported article, and given suitable conditions it is possible to build up a successful export trade with Great Britain and other foreign countries to the lasting advantage of this country. The Company were also awarded a Diploma of merit at the Madras Industrial Exhibition of 1918.

35. (*g*) The general cost of production is fairly low and but for this unhealthy and artificial competition which enables Germany to dump her goods into India at ridiculously cheap rates, there is every chance for the indigenous product to grow and to stand on its own legs, so as to meet any world competition.

Protection, however, is absolutely necessary under present abnormal conditions, notably on account of the fabulous depreciation and collapse of the Mark in Germany which to a certain extent acts like a bounty in favour of the exporting country, and is the means of overflooding of cheap goods, in allied countries, causing so much unemployment in Great Britain and elsewhere.

36. Even in pre-war times German Magnesium Chloride used to be landed in Bombay at about Rs. 3-8 per cwt. f.o.r. Bombay, whereas just now the prices rule between Re. 1 and Rs. 2 per cwt. owing to a variety of causes, *viz.*:—

Firstly.—The Germans have long since ceased quoting in Marks. All their transactions are now conducted in foreign currency and with every appreciable fall in the value of the Mark there has been a material reduction in sterling quotations as judged from the tabular statements already given. Even the latest quotations are in the vicinity of £1-10 to £2 per ton which would mean roughly less than Rs. 2 per cwt. f.o.r. Bombay including the 15 per cent. duty and all other incidental charges.

This is possibly due to the fact that Germany having established gold credits in foreign countries, is in a position to sell so cheap despite the fact that the cost of production in her own country has materially risen, instead of being lowered.

37. *Secondly.*—Germany being a debtor country is naturally anxious to turn all her merchantable ware into ready foreign money regardless of real value, and this added to special export facilities granted in her own country, possibly enables her to throw it away so cheap, which others cannot afford to do.

38. *Thirdly.*—All export trade is run by big groups or syndicates who dabble in marks and arrange credits in a way which materially cheapens their cost of purchase.

39. *Fourthly.*—Magnesium Chloride is a waste product of very little value in Germany itself and since it requires to be removed from there at any cost, after recovery of other very valuable salts or minerals, they could afford to pack it off to foreigners, irrespective of price.

40. *Fifthly.*—Magnesium Chloride used to be brought as bottom cargo before the war and even now there are extremely low freight rates for this class of goods which are brought down from Germany in their own steamers.

41. *Sixthly.*—Germany is out to capture her lost trade and to re-establish herself in foreign lands. She can therefore afford to offer this bait of cheap prices to kill the infant indigenous industries in other countries which when once done, would no doubt enable her to demand her own terms and sell at any fancy prices afterwards.

42. *Seventhly.*—During the last 2 years many an Indian Merchant who had never dreamt of handling or even seen this article, was tempted by low offers to put large indent orders so much so that where ten tons would suffice, 100 tons were ordered, and the market was overstocked. Owing to the corrosive nature, bad packing, long distances and transhipments at various places, German drums have been found to be leaked out from top to bottom with the result that the merchant here is badly hit and is very anxious to part with his goods at any price lest he might not realise even that much by waiting longer. Moreover, it requires big godown space, which means further expense. There are, therefore, anxious sellers in Bombay at the moment at even Re. 1-8 a cwt. or lower for any lot purchases. This argument is only used to show the unfortunate position into which the Indian industry has been reduced through lack of protection

43. *Eighthly.*—There have been prolonged Mill strikes at Ahmedabad. Besides in consequence of dull trade generally, leading to curtailed mill production, the demand for Magnesium Chloride has also considerably fallen, which acts like a load, on this industry. Meantime fresh shipments continue to arrive against pending contracts, thus making it more and more difficult for the nascent industry to hold up against fast accumulating stocks. They are per force obliged, therefore, to shut down the Factory in view of such adverse factors, at heavy loss. Protection is not wanted permanently but, as a temporary measure only, so long as this abnormal state of things lasts. As it is, it is even too late and should have been thought of 2 years ago. For the mischief is done and it will take a considerable time to get things moving again in face of the immense quantities that are already imported and lying unconsumed in the country. If any relief is to be granted, urgent steps are most necessary and advisable.

44. *Ninthly.*—Apart from any indirect advantages like those of Government Royalty, distribution of wages and payment of Railway charges, income-tax, etc., as could be gleaned from the following table, which are lost to the country, Government have by their new agreement a direct interest in the continuance and well being of this industry owing to participation in half the Company's profits year after year. Some consideration is, therefore, due to the Company as this factor cannot altogether be ignored or lost sight of.

Table of Royalty—Labour charges and Railway freight—Payments annually made by the Company.

Years.	Government Royalty.	Wages and other charges.	Railway freight.	TOTAL.
	Rs.	Rs. (about)	Rs.	Rs.
1916	31,847	30,000	10,690	72,537
1917	38,096	20,000	10,025	68,121
1918	55,741	48,000	13,591	1,17,332
1919	47,296	45,000	10,721	1,03,017
1920 . . .	33,557	30,000	7,589	71,146
1921	38,772	26,000	12,500	72,272
1922	14,874	24,000	5,118	43,992
TOTAL .	2,55,183	2,23,000	70,234	5,48,417 *plus* 68,429

for income-tax paid during the above period which would mean a potential gain to the country at the rate of about Rs. 90,000 per annum.

45. *Tenthly.*—Judging from the Company's production during the past seven years of nearly 9,500 tons, there has been an average annual output of 1,300 to 1,400 tons which is derived only from 4 months' working on their present resources. This means that for eight months of the year the Factory lies idle and is not working. Provided there is enough demand, even on their present plant—which could be considerably increased at very little cost—the Pioneer Magnesia Works can turn out at Kharaghoda at least 4,000 tons of Magnesium Chloride per annum, which is equal *to the whole of the demand* from Indian Mills and this would necesarily lower their cost of production, and add proportionately to the distribution under all the three heads as shown above, which otherwise would be a total economic loss to India if this promising nascent industry were to be extinct, and hounded out by such ruthless German tactics.

46. *Eleventhly.*—To the argument that protection may tend to make the price unnecessarily dear to the consumer, the following answer could be given.

Conditions. of course, vary with each individual Mill and hence it is difficult to give exact calculations. However, the following will give a good idea.

On the basis of 20*s*. to 24*s*. warp × 30*s*. to 36*s*. weft of yarn used in a Mill and taking an average of even 100 per cent. size per lb. of yarn (which is altogether a very high percentage to take for all India) it appears that less than half a lb. of size is used on every lb. of cloth woven. The average approximate cost per lb. of size mixing in a Mill at the present day would roughly amount to 2½ annas of which the proportion of Magnesium Chloride is only about 1/24th of 30 pies=1 to 1¼ pies per lb. of size used.

In other words, the total cost of Magnesium Chloride per lb. of cloth woven cannot be more than half a pie at the very highest computation which is altogether negligible and the Mill Owners' argument of increase in costs, would fall to the ground in view of the other important negative advantages accruing to the country by the continuance of the Industry in India.

National defence.

Twelvthly.—Though not directly contributing to national defence, this Industry may in times of emergency be easily adapted for collection and recovery of bromine and such like substances which are highly valued for explosives and the Factory could also be made a nucleus of any new or cognate industries which it may be possible to run to advantage or made to serve for demonstration purposes at Kharaghoda.

47. *Thirteenthly.*—The best way of protecting the Industry would be by means of an anti-dumping duty on the Foreign Magnesium Chloride arriving at port, so as to make it impossible for it to undersell the local product at anything below the actual cost of production as shewn above. For this we have a good precedent in Australia where anti-dumping legislation actually is in force now and a Tariff Board is working to protect the local industries against ruthless foreign competition, as is now contemplated in India.

To decide what amount of actual Duty should be effective against the foreign article, it will be necessary to consider the local minimum costs and the average approximate import value during the past, and supposing the Company's lowest cost of production comes to about Rs. 3-2 per cwt. f.o.r. Kharaghoda (without Royalty) *plus* handling and railway freight and godown charges in Bombay amounting to Re. 1-8 extra it will mean Rs. 4-10 the least Bombay. To this must be added a reasonable margin of profit for the Company of say 12½ per cent. which would bring the minimum sale price to about Rs. 5-4 per cwt. in Bombay, and to bridge this gulf a duty of about 200 per cent. or a little more or less may even be necessary so long as German import prices remain at this present low level as judged from the Customs returns above quoted.

48. *Fourteenthly.*—Protection is not sought for the Pioneer Magnesia Works alone but in favour of the Magnesium Chloride industry in India as a whole, and there being other rich fields of supply also, there is no fear of creating a monopoly for any particular Company. Rather it is bound to benefit the whole country and do immense good in the end both to the producer as well as the consumer.

Enclosure 2.

SCHEDULE A.

[Comparative analysis of different samples of German as well as Kharaghoda Magnesium Chloride.]

Bombay, January 1923.

No.	Description of sample.	Colour.	Alkalinity in C. Cs. of N. Na. OH per 100 gas.	Magnesium Sulphate $MgSO_4$.	Sodium Chloride Na Cl.	Iron Oxide Fe_2O_3.	Calcium Oxide CaO.	Magnesium Chloride $MgCl_2$.	Water (by diff.).	REMARKS.
1	German 12 cwt. Drum Top	Sky blue	1·20	0·25	1·62	0·001	..	45·82	52·31	All the German samples gave a clear solution, on the addition of H. Cl. The Kharaghoda samples on similar treatment did not give any residue but the solution was cloudy owing to very very fine suspension. In samples 3, 4, 5, 7, 8, 9, 10 and 11 the amount of iron oxide was less than 0·001 per cent.
2	German 12 cwt. Drum bottom	Do.	1·20	0·25	1·74	0·001	..	46·06	51·95	
3	German Drum Middle	Good white	0·72	0·12	0·68	..	..	45·82	52·98	
4	German Drum Bottom	Do.	0·90	0·13	0·68	..	..	47·05	52·74	
5	German Drum Top	White slight bluish tint.	1·75	0·30	0·10	..	..	46·65	52·95	
6	German Drum Bottom	Strong yellow	1·75	0·34	0·16	0·007	..	46·20	52·80	
7	Kharaghoda Drum Top	Grey	0·46	0·77	0·38	..	..	46·24	52·61	
8	Kharaghoda Drum Bottom	Do.	2·0	3·70	0·40	..	..	44·95	50·95	
9	Kharaghoda Bottom	Grey but deeper than in 7 and 8.	1·74	3·39	0·60	..	..	45·19	50·81	
10	Kharaghoda Top	Do.	0·87	2·05	0·85	..	..	45·80	51·30	
11	German powdered	Dull Granular	Acid in reaction acidity 0·3 per 100 C. Cs. of N. H_2SO_4 gms.	*Nil.*	*Nil.*	..	..	46·74	53·26	

Enclosure 3.

SCHEDULE B.

Detailed Statement showing actual annual expenditure incurred by the Pioneer Magnesia Works on Magnesium Chloride manufactured at Kharaghoda according to their Books of Account from 1916 to 1922.

Comparative statement of working costs from 1916 onwards.

Serial No.	Item.		1916.	1917.	1918.	1919.	1920.	1921.	1922.
			Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1	Royalty	Manufacturing costs.	31,847	38,096	55,741	47,296	35,557	33,772	14,874
2	Bitterns extraction and storage		3,775	6,083	19,845	16,914	9,694	3,673	5,618
3	Factory charges		20,277	6,632	16,736	18,561	11,348	10,875	9,309
4	Motor Rail Wagon		..	..	..	..	..	..	2,661
5	Fuel		1,067	14,229	39,830	23,949	17,691	15,103	12,938
6	Drums and Packing		10,896	20,440	48,588	38,298	28,606	35,913	16,605
7	Railway charges		10,690	10,025	13,591	10,721	7,589	12,500	5,118
8	Transport and handling charges		3,157	5,915	7,286	8,536	6,039	7,485	3,138
9	Sundries	General overhead costs.	848	2,720	2,596	5,290	2,084	2,294	1,500
10	Rents and Taxes		1,498	278	425	1,561	2,289	2,213	1,463
11	Travelling		726	580	1,258	936	611	1,245	1,191
12	Establishments, allowances, etc.		6,681	9,535	17,915	5,910	5,275	12,141	6,377
13	Bad debts		280	1,606	2,310	239	59	1,144	..
14	Insurance charges		..	..	..	..	..	..	360
15	Interest		3,124	2,807	2,385	2,951	3,437	5,514	8,046
16	Selling Expenses (Commissions, discounts, shortages, etc.)		20,349	19,579	38,806	31,370	16,468	20,864	9,803
17	Depreciation		5,957	14,268	15,000	22,843	24,933	24,000	11,844
18	Income Tax		1,625	2,645	5,572	23,566	16,114	18,907	..
	TOTAL		1,13,107	1,53,228	2,90,888	2,64,499	1,88,344	2,07,646	1,10,845

Statement of actual working costs of Magnesium Chloride per cwt. f.o.r. Kharaghoda based on annual production, at the Factory from 1916 to 1922, as seen from the Pioneer Magnesia Works' Books of Account. These are exclusive of Railway freights, handling charges, selling commissions, depreciation and income-tax payments which would all have to be counted extra.

Years.	Sales.	Productions.	Total annual working costs as above f. o. r. Kharaghoda.	Average cost of production without other charges shown above per cwt. f. o. r. Kharaghoda.
	cwts.	cwts.	Rs.	Rs. A. P.
1916	16,762	19,327	71,329	3 11 0
1917	23,610	22,896	1,00,796	4 6 6
1918	38,403	36,903	2,10,633	5 11 3
1919	32,950	36,434	1,67,463	4 9 6
1920	23,468	29,542	1,17,201	4 0 0
1921	21,979	17,034	1,23,890	7 4 3
1922	14,698	27,059	80,942	3 0 0
TOTAL .	171,870	189,195	8,72,254	4 9 9

N.B.—(1) The reason why the expense in 1921 is so high is because in that year the production was exceptionally low.

(2) The average cost per cwt. of Rs. 4-9-9 f.o.r. Kharaghoda as shown above can be roughly explained as under

	Rs. A. P.
Factory and fuel cost (about)	1 2 0
Government Royalty	1 8 0
Drums and packing	1 2 0
Interest, establishment and all other sundry charges excepting those mentioned on top	0 13 9
	4 9 9 per cwt.

(3) Up to the year 1921 Royalty remained fixed at Re. 1-8 a cwt. irrespective of whether the price realised was higher or lower.

It will be noticed that the Royalty to Government has up to now worked out on an average to nearly ⅓rd of the cost of production, which is rather prohibitive.

Enclosure 4.

No. 88-5.

From—H. T. SORLEY, Esq., M.A., I.C.S., Deputy Commissioner of Salt and Excise, Northern Division, Ahmedabad,

To—The General Manager, Pioneer Magnesia Works, Ahmedabad.

13th September 1923.

I am glad to receive the draft copy of the case prepared by you for submission before the Tariff Board. I perused the case with interest and certainly consider it worth putting before the Tariff Board for consideration.

I am submitting the papers to the Commissioner for consideration remarking that the industry in question deserves some protection against foreign competition.

Enclosure 5.

Copy of Draft Agreement regarding Magnesium Chloride at Kharaghoda.

THIS INDENTURE made the day of One thousand nine hundred and between the Secretary of State for India in Council (hereinafter referred to as "the Secretary of State" which expression shall include his successors in office and assigns unless such interpretation shall be excluded by or repugnant to the context) of the one part and Sardar Khan Bahadur Rustom Jehangir, Vakil, on behalf and in the name of the firm carrying on business as the Pioneer Magnesia Works, consisting of the following partners namely, Sardar Khan Bahadur Rustom Jehangir, Vakil, Behramji Sorabji Lalkaka, and Parjanyarai Vaikunthrai Mehd, all of Ahmedabad (hereinafter referred to as "the said firm" which expression shall include any future partner or partners of the said firm and the survivors or survivor of them their heirs executors administrators and assigns unless such interpretation shall be excluded by or be repugnant to the context) of the other part.

2. WITNESSETH that in consideration of the royalties covenants and conditions hereinafter reserved and contained and on the part of the said firm to be respectively paid performed and observed the Secretary of State doth hereby permit the said firm through themselves or their agents or servants.

FULL SOLE AND EXCLUSIVE LICENSE AND AUTHORITY TO UTILIZE for the term of 30 years commencing from the day of 19 all bitterns remaining, after the extraction of salt from the brine, in the salt pans at the Pritchard Salt Works situated at Kharaghoda in the Taluka of the Ahmedabad district for the purpose of manufacturing Magnesium Chloride and Magnesium Sulphate from the said bitterns:

TOGETHER WITH FULL LIBERTY AND LICENSE to have access to the said salt works for the purpose of removing such bitterns.

3. AND the said firm hereby agrees as follows:—

(*a*) "The said Royalty will be payable after allowing to the Firm as its own exclusive property ten per cent. of the actual total expenditure incurred without counting the interest or the income-tax charges for the period. After deducting this item from the total gross profits of the year, the surplus, if any,

shall be divided into two equal parts and given to the Government as Royalty and to the Firm as their own respective shares;

(*b*) to keep accounts, in such form as may be prescribed by the Secretary of State, of the quantity of Magnesium Chloride and Magnesium Sulphate so manufactured and exported and to allow inspection of the said account at all reasonable times by such officer as the Secretary of State may authorise in this behalf;

(*c*) to obtain the previous approval of the Secretary of State to all proposed expenditure on buildings, plant, machinery, bungalows, quarters and works to be erected or constructed in connection with the said manufacture;

(*d*) to utilise daily not less than four hundred and eighty gallons of bitterns for the purpose of the said manufacture;

(*e*) to supply the Secretary of State during the said term of thirty years, on payment of a reasonable price to be determined from time to time by agreement between the parties, with such quantities of the mother liquor and of the said liquor at any subsequent stage in the process of manufacture as he may require;

(*f*) not to dismantle or remove any building, plant, machinery, bungalow, quarter, work or material necessary for the purpose of or incidental to the said manufacture, save as provided in this agreement.

4. AND the Secretary of State hereby agrees to permit the said firm:

(*a*) to manufacture from the said bitterns, subject to terms and conditions to be agreed on by the parties, bromine, bromide or other bye-products, unless the said manufacture of bye-product be at any time undertaken by a Government department;

(*b*) to use, subject to the control of the Salt Department, such roads, ways and railway sidings on the said Pritchard Salt Works as may be necessary for the purpose of the said manufacture and for the removal of bitterns and manufactured products.

5. AND the Secretary of State shall lease to the said firm land which in the opinion of the Secretary of State is reasonably required for the purposes of the said manufacture and shall, subject to the provisions of clause 3 (*c*) of this agreement, permit the said firm to erect on the said land, plant, machinery, buildings, bungalows, quarters and other works necessary for the purpose of or incidental to the said manufacture; such leases and permission shall be subject to such restrictions or conditions relating to the use of land, including the payment of any rates or taxes, as may be applicable under any enactment or rule for the time being in force to the land in the vicinity of the said salt works.

6. The Secretary of State shall, on giving six months' prior notice in writing of such his intention, to be delivered at or sent by registered post to the office of the said firm at Kharaghoda, have the right at any time to cancel this indenture and to take over the business of the said firm under the terms of this indenture and to enter upon and take possession of all land in possession of the said firm for the purposes of the said business and to take possession of all buildings, plant, machinery, works and material thereon:

AND the said firm shall surrender to the Secretary of State all their right, title and interest in such land, buildings, plant, machinery, bungalows, quarters, works and materials and shall quietly give possession of the same:

AND the Secretary of State shall in such event reimburse to the said firm the market value, to be determined by agreement between the parties hereto, at the date of the resumption of the right title and interest of the said firm in all such buildings, plant, machinery, works, bungalows and quarters of which the expenditure has been approved under clause 3 (*c*) of this agreement and in the land of which possession has been taken under the terms of this condition, and in the materials:

PROVIDED that no compensation shall be payable in the event of such entry and taking possession for buildings, plant, machinery and works of which the expenditure has not been approved under the provisions of clause 3 (*c*) of this agreement or for land leased to the said firm by Government or on which the said firm has a right of entry by permission of Government, or for bitterns removed from the salt works:

PROVIDED FURTHER that in the event of disagreement between the parties hereto as to the said market value, the said value shall be determined by an equal number of arbitrators appointed by the parties hereto:

PROVIDED FURTHER that during the first ten years of the terms hereby granted the Secretary of State shall not have the right, save on the ground of gross negligence, grave mismanagement and incapacity on the part of the said firm, to take over the said business as aforesaid except for the purpose of carrying on the said business under the direction, control and management of a department of Government.

7. AND THE SAID FIRM shall be at liberty to terminate this agreement at any time before the expiry of the said term of thirty years by giving three months prior notice in writing to the Secretary of State such notice to be delivered at, or sent by registered post to the office of the Collector of Ahmedabad. In the event of the agreement being so terminated the Secretary of State, on giving notice to the said firm, before the expiry of the aforesaid period of 3 months, in the manner provided in clause 6 of this agreement, shall be at liberty to take over the business of the said firm in the manner and on the conditions specified in clause 6 of this agreement:

PROVIDED that if the Secretary of State shall not exercise his option to take over the business, the said firm shall not be entitled to any compensation but shall be at liberty to dismantle and remove, after the expiry of the notice period and within six months from the date of such termination of the agreement, all buildings, plant, machinery, bungalows, quarters and works erected or constructed by them in connection with the said manufacture.

8. AND it is hereby further agreed that in case the said firm shall not fulfil or perform all and every of the conditions set forth in this indenture or shall commit a breach of any of them, it shall be lawful for the Secretary of State, after giving six months' previous notice in writing to the said firm in the manner provided in clause 6 of this agreement to cancel this agreement free of all claims of any persons whatsoever:

AND in such event the Secretary of State shall be at liberty, on giving notice in writing in the manner provided in clause 6 of this agreement of such his intention before the expiry of the aforesaid period of six months, to take over the business of the said firm in the manner and on the conditions specified in clause 6 of this agreement:

PROVIDED THAT IF THE Secretary of State shall not exercise his option to take over the business of the said firm, the said firm shall be at liberty to dismantle and remove any buildings, plant, machinery, bungalows, quarters or works erected or constructed by them in connection with the said manufacture, after the expiry of the aforesaid period of six months and within six months from the date of cancellation of this agreement but shall not be entitled to any compensation for such cancellation.

IN WITNESS WHEREOF Esq., Secretary to Government, hath by order of the Honourable the Governor of Bombay in Council set his hand and the seal of his office for and on behalf of the Secretary of State for India in Council and the said firm hath hereunto set their hands the day and year first above written.

Signed and sealed by Esq., Secretary to Government, for and on behalf of the Secretary of State for India in Council in the presence of

Seal.

1.

2.

Signed by Sardar Khan Bahadur Rustom Jehangir, Vakil, Behramji Sorabji Lalkaka and Parjanyarai Baikunthrai Mehd in the presence of

1.

2.

Enclosure 6.

Magnesium Chloride Manufacture and the Pioneer Magnesia Works by B. S. LALKAKA, B.A., General Manager and Partner of the Pioneer Magnesia Works.

Bitterns.

" Bitterns " is a term applied to the residual mother liquor left in the salt pans after sodium chloride (common salt) is formed. It is, therefore, a by-product in salt manufacture, being usually found in the ratio of 1 to 12 at Kharaghoda where the manufacture of salt on a large scale is carried on under the control of the Government of Bombay. The mode of manufacture here differs considerably from the method in vogue at other places in the Presidency, where ordinary sea water is used. At Kharaghoda the brine is drawn from wells. Kharaghoda forms part of the Runn of Cutch, and is eighteen miles distanct from the important junction station of Viramgam, with which it is connected by a broad gauge branch line of the Bombay, Baroda and Central India Railway.

The Pritchard Salt Works, as they are known, were first opened about 35 years ago and now produce annually on an average about 40 lakhs of Bengal maunds of what is called " Badagra " salt. The whole of the surrounding area is now a sandy desert, probably submerged in bygone ages.

Salt manufacture begins soon after the rains are over, when the brine with which the sandy soil is saturated is raised and filled into salt pans to a depth of nine inches to a foot and allowed to evaporate for a period of from six to eight weeks. Thin incrustations of salt are formed at the bottom and the floating bitterns, or mother liquor, is then drained off and conducted into separate channels known as " farans." Fresh brine is then super-added by slow degrees until actual salt cubes are formed which are ready for

extraction and storage by April. The salt works, which are divided into a number of "sidings," are served by a net-work of railway lines and are a regular hive of industry giving employment to several thousand labourers during the summer months. Seven engines, each drawing a load of 40 to 50 wagons laden with salt, ply from sunrise to sunset removing the salt from the pans to closed and open Government stores near the railway station where it is stocked. The rainfall, though averaging only about 20 inches annually, is sufficient to flood the low-lying *agars*, or pans, in the monsoon. During the summer months the sun is very strong and dust storms are frequent, but the cold weather is healthy and bracing.

The bitterns, which are drawn off to the extent of several thousand tons annually during the season of salt manufacture, are exceedingly rich in magnesia salts. They are now used for the manufacture of magnesium chloride, the main use of which is as a sizing agent required by textile mills all the world over.

Composition of bitterns.

The bitterns left in the pans after the manufacture of common salt from sea water contain magnesia and other salts, but the following analyses show the greater concentration of both common salt and magnesium chloride in the brines of the Runn of Cutch. It should be mentioned that the brines vary considerably in composition, even in adjacent wells, and that the figures in the following table are the averages for five samples analysed at the Government Laboratory, London, on behalf of the Director of Industries, Bombay. The figures for sea water are based on the well known analyses of Dittmar.

	Kharaghoda brines.	Sea water.
	Per cent.	Per cent.
Sodium chloride (Na Cl)	14·67	2·72
Magnesium chloride (Mg Cl_2)	4·63	0·33
Magnesium sulphate (Mg SO_4)	0·48	0·22
Calcium Sulphate (Ca SO_4)	0·44	0·13
Potassium chloride (K Cl.)	0·41	0·07
Calcium carbonate (Ca CO_3)	0·01	0·01
Magnesium bromide (Mg Br_2)	0·07	0·01

Bitterns contain all the salts enumerated above except the calcium sulphate, but no efforts are usually made to utilize them. At the end of each season they are washed away by the rain.

Magnesium chloride, magnesium sulphate (epsom salts) potassium chloride and bromine are all substances of commercial importance, and the quantity which is annually wasted in India has been estimated by Watson and Mackenzie Wallis to be as follows:—

Amount of salts wasted annually in Indian bitterns.

	Tons.
Magnesium chloride ($MgCl_2 6H_2O$)	193,000
Magnesium sulphate or epsom salts ($MgSO_4 7H_2O$)	127,000
Potassium chloride (KCl.)	20,000
Bromine (Br.)	1,800

Magnesium chloride.

Before the war magnesium chloride was practically a German monopoly, and Indian supplies were almost wholly imported from Germany at the very low price of Rs. 3 to 4 per cwt. At Stassfurt in Germany there are large deposits of the mineral known as carnallite, which is a double chloride of potassium and magnesium with traces of bromides and iodides. Magnesium chloride forms the greater portion of this carnallite and has to be eliminated before recovery of potassium bromides and iodides, so that it could be exported as a by-product at little cost, while it was generally shipped as bottom cargo at low freight rates.

Magnesium chloride is one of the five most important ingredients used in size mixing. All grey yarn before passing to the loom-shed requires to be sized to an extent varying with the nature of the cloth to be woven and the prevailing climatic conditions, but in order to keep the thread pliable and soft and to enable it to withstand the strain involved in the process of weaving a certain amount of size is practically always needed.

The following are the most important sizing substances in use:—

(*a*) Adhesive or starchy ingredients, like wheat flour, maize starch, or farina.

(*b*) Weight-giving products, like china clay and French chalk.

(*c*) Fatty or softening substances, like oils, beef and mutton tallow, glycerine, soap, etc.

(*d*) Zinc chloride, to prevent mildew or fungus growths, and

(*e*) Deliquescent agents, like magnesium or calcium chloride for keeping the thread soft and pliable. Magnesium chloride, being hygroscopic in character, is peculiarly suitable as a sizing material.

At Ahmedabad, where the climate is for the most part very dry and hot, much heavily sized cloth is woven, and for this as much as 100 to 130 per cent. of size is required, entailing a much larger consumption of magnesium chloride than at Bombay, where the climate is humid and the cloth woven finer than that made at Ahmedabad. The consumption varies from about 5 tons per 100 looms per annum in Ahmedabad to about half that quantity in the Bombay mills.

Taking the total number of looms in India to be about 120,000, and estimating 3½ tons per 100 looms as the average mean consumption, the annual requirements of the country may be roughly calculated at about 4,500 tons, which were almost entirely supplied from Germany before the war. As soon as hostilities commenced and supplies were cut off, a stimulus was given to the investigation of local resources and attention was drawn to the almost unlimited supply of bitterns at Kharaghoda going to waste from year to year with the result that experiments were made to test the possibility of turning out a good substitute for the German article.

Manufacture of magnesium chloride in India.

Tenders were invited by the Government of Bombay for the right to remove the bitterns from the salt works with a view to by-product manufacture, and Mr. P. V. Mehd, M.A., B.Sc., who was then working as an Assistant Professor of Chemistry at St. Xavier's College, obtained the first contract from Government for extracting and removing the bitterns for a few months in the year 1915 on payment of 8 annas per cwt. as royalty. Fresh tenders were subsequently invited by the Commissioner of Salt and Excise for a one year's contract, and a company under the name of the Pioneer Magnesia Works was then formed with the Hon'ble Sardar Rustom Jehangir Vakil, Millowner and Merchant of Ahmedabad, Mr. P. V. Mehd and the writer, as partners. The royalty payable to Government was fixed at Re. 1-8-0 a cwt.

As the first contracts were given only for a year at a time, it was not possible at the outset to work on a large or permanent scale. During the

first year the raw material was railed from Kharaghoda to Ahmedabad, a distance of about 60 miles, where it was prepared in a rough way by the Company for the use of the mills. In the second year, 1916, the factory was removed to Kharaghoda where it has been working ever since.

The Company's premises occupy an area of about 20,000 square yards leased from Government on which are situated their factory buildings, workmen's chawls, drum-making plant and store houses, as well as two well-built bungalows for the use of the proprietors and the supervising staff. Reservoirs, cemented and stone-paved throughout, have been constructed with a capacity of a thousand tons of bitterns. A stock of several thousand drums of the finished product is always maintained and kept ready to meet any demand. The plant now in operation was designed by Mr. T. S. Dawson, late Principal of the Victoria Jubilee Technical Institute of Bombay, and has given very good results.

As the result of negotiations carried on through the Director of Industries, the Company have now been granted a long lease and, in lieu of the existing fixed rate, royalty is to be payable in future on a sliding scale adjusted according to the fluctuations of the market.

Operations at Kharaghoda.

The first stage of operations at Kharaghoda is the collection of the bitterns at the *agars* and their transport to the reservoirs adjoining the Company's factory by means of a motor rail wagon with a special tank attachment. As the bitterns are allowed to concentrate further in the reservoirs their collection is carried out considerably in advance of their utilization at the factory. Even at a density of 48°T the bitterns still contain some common salt, and the manufacturing operations are designed to eliminate this and other salts, of which the most important is magnesium sulphate, as well as suspended clay and other heavy impurities. The latter settle down in the reservoirs where the common salt is also removed. The bitterns, now very rich in magnesium chloride, are then pumped to a series of copper pans placed over furnaces, where the magnesium sulphate is so altered in composition that its separation is easily effected in a subsidiary set of copper pans to which the bitterns, after their treatment in the furnace pans, are transferred. The magnesium chloride is finally recovered as a hot liquid which is poured into strong galvanized drums where it solidifies and is ready for export from the factory.

Quality of Indian magnesium chloride.

Analysis by Mr. A. J. Turner, Principal of the Victoria Jubilee Technical Institute, Bombay, shows that the Kharaghoda product is quite as good as the imported article. A favourable opinion has also been recorded by Drs. Sudborough and Watson of the Indian Institute of Science, Bangalore. Samples taken by the Director of Industries, Bombay, were analysed at his request at the Government Laboratory, London, where they were pronounced to be "good commercial magnesium chloride (fully hydrated)."

The magnesium chloride of Kharaghoda has been found to compare well with the German article in practical use as well as in chemical analysis. The only handicap against it is its appearance. The imported article has a better colour and, though it makes no difference in actual use, this naturally secures its preference by many consumers. The origin of the greyish colour in the Kharaghoda production is not known and constitutes a problem of considerable scientific and technical interest. Several explanations have been offered but no method of removing it has yet been devised. Even when a perfectly pure white article has been obtained by crystallization, the grey colour usually reappears on fusion, and as it is the fused and not the crystallized chemical which is required for trade purposes, the Kharaghoda production reaches the consumer with a greyish tinge. The Company is, however, fully alive to the importance of removing this purely superficial defect and is working, in collaboration with the Bombay Department of

Industries and with the assistance of the Indian Institute of Science, to solve the problem.

Last year the Company sent a trial consignment of a few tons to England with the idea of building up an export trade. The product was approved and several offers were received, but, owing to the recent slump in prices in the United Kingdom, it has become impossible in the meantime to make headway.

Output.

The Company's works are in charge of a trained chemist and a qualified engineer, and their labour force during the working season numbers about 100. They have their own offices at Ahmedabad and Bombay, and in the latter city Messrs. H. M. Mehta & Co. have been appointed selling agents. The business side has been carefully organized and representatives travel all over India. The Company claims that hitherto no serious complaint either of defective quality or shortage of supply has been received from its customers.

The resources of Kharaghoda in magnesium chloride are immense and the Company's works could easily supply the whole of the Indian market. During the war the Company rescued the cotton mill industry in Western India from a serious difficulty, as will be seen from the figures in the statement below. Up to date it has paid over Rs. 2½ lakhs to Government in royalties and, as good prices were obtained till last year, it has also contributed large sums in income tax to Government revenues. Within the last year or so Germany has dumped large quantities of magnesium chloride in India where the selling price has been much below that in England. Despite these depressing trade conditions the Pioneer Magnesia Works are still able to compete in price, as well as in quality, with the foreign manufacturer, as the following table shows.

Imports and Indian production of magnesium chloride.

NOTE.—Import figures for the years preceding 1914-15 are not available.

Years.	Imports.		Sales of Kharaghoda production.*
	Tons.	Value.	
		Rs.	Tons.
1914-15	2,705	3,00,570	...
1915-16	3,563	9,33,075	..
1916-17	1,067†	2,81,355	838
1917-18	1,185†	2,90,955	1,181
1918-19	Not available.		1,970
1919-20	848	2,27,397	1,647
1920-21	2,929	8,39,210	1,171
1921-22	2,330	4,49,680	1,099
1922, April to July, four months	1,510	18,29,746	600‡

*Sales for calendar years 1916 to 1921.
†Excluding imports into Calcutta and Karachi.
‡Sales for seven months, January to July 1922.

There is also a considerable production of magnesium chloride at Dhrangadra.

Future prospects.

Apart from its use as a sizing agent not many users are known for magnesium chloride. In the past there has been a small demand for it from rice mills in Burma and Madras for use in grinding operations. Efforts have also been made from time to time to popularize the use of magnesia cements. Its employment on road surfaces in Bombay city has been suggested. All other requirements are, however, comparatively small and the annual outturn at Stassfurt in Germany, the chief centre of production, was formerly only about 25,000 tons.

Other by-products might, however, be manufactured at Kharaghoda, such as epsom salts, Glauber's salt, and a substance known as "*chirodi*" from which plaster of paris can be obtained. The Company has made attempts to produce these, as well as zinc chloride, and has investigated the extraction of bromides, but none of these efforts have so far been commercially successful.

Epsom salts might be extracted from the bitterns before the magnesium cloride or from the sludge which remains after the recovery of the chloride from the bitterns by the process already described. This sludge contains about 35 per cent. of magnesium sulphate. Magnesium sulphate, which is used in rather larger quantities than the chloride, is also chiefly used in finishing textiles.

On the analysis of a large range of samples of brines, bitterns, salts and sludges supplied by the Director of Industries, Bombay, to the Government Laboratory, London, the Department of Scientific and Industrial Research in England recommended further experiments on a "semi-large" scale for the recovery of other salts, including potassium salts and bromides, but the Government of Bombay, in view of the fact that the royalties on magnesium chloride go to imperial and not to provincial revenues, have not considered further expenditure on their part justified and have referred the matter to the Government of India.

Table salt.

The Company have recently erected an up-to-date plant for preparing refined table salt from the ordinary "Badagra" salt manufactured at Kharaghoda. This plant was designed and brought into successful operation by Mr. A. J. Turner, Principal of the Victoria Jubilee Technical Institute, Bombay, who is one of the technical advisers of the provincial Department of Industries. The refined salt equals in quality and appearance the best imported table salt and it is hoped to obtain a large market for it, especially in Calcutta. Till recently railway rates have been prohibitive, but these have now been adjusted to the same scale as those for unrefined salt.

B. S. LALKAKA.

Statement II.—Copy of letter from the Pioneer Magnesia Works, dated 17th November 1923, to the Government of India, Department of Commerce.

We have the honour to acknowledge receipt of your letter No. 6072, dated Simla, 19th October, stating that the Tariff Board being at present fully occupied with inquiries into the steel and derivative industries, no further questions can be referred to them for examination until further progress be made in the investigation now in hand.

We beg to thank you for saying that our application has been noted and that if the Government of India decide to remit it to the Board, we may be duly informed.

The reply is extremely disheartening, in that it means shelving of the question "Sine die," and with your permission we would respectfully invite your attention to the following important points which will show how urgent it is to bring the question before the Board for any examination they may deem proper.

(1) Without entering into the merits of the case, it may be pointed out that the main reason why our industry cannot compete with the foreign article, is because of the extrordinary cheap rates at which the German product (almost 97 per cent. of the total imports) is brought into India, owing to a variety of causes and the existence of very heavy low priced stocks in India, not to mention in other neutral countries and at German Ports.

(2) There has been some evidence lately, so far, though very little—of the previous German stocks in Bombay getting scarce, and though the prices also have stiffened by a few annas per cwt. here and there, what is most suspicious is the possibility of further large orders going from our mills and merchants with consequent risk of dumping, which sooner or later is bound to shut us out for months on end, without any prospect of our young industry, reviving and immediate steps cannot be too strongly urged in the protection of our own nascent industry.

(3) The Director of Industries who takes a particular interest in our own case—as we are working according to our agreement with the Secretary of State, on a profit sharing basis with the Government under certain conditions and under that officer's general supervision—has been good enough to make a strong representation on our behalf to the Bombay Government requesting that if possible, our case instead of being indefinitely postponed may be heard before the Board now and in view of the Tariff Board actually sitting in Bombay at the present moment and going into the question of the Chemical Industries—as they did yesterday in case of the Eastern Chemical Works and the Dharamsi Morarji Chemical Works of Bombay, when this very question of Magnesium Chloride had been discussed also—would it be too much to hope, Sir, that the Government of India may be pleased to revise their decision and consider our case also fit for urgent examination whilst the Board are in Bombay and before it gets too late. For after all it is a question of life and death to the industry as circumstances stand at present, and we fear that a fine opportunity will be lost by further delay to save it from inanition.

We also beg to enclose a copy of our letter of the 15th instant to the Director of Industries pertaining to this question.

Copy forwarded to the Director of Industries, Bombay, for information.

Enclosure 1.

123, Esplanade Road,
Bombay, 15th November 1923.

H. F. KNIGHT, Esq.,
Acting Director of Industries, Bombay.

Re *Tariff Board.*

SIR,

Referring to our conversation and subsequent letter of the 30th ultimo, may we respectfully inquire whether you have been able to address the Bombay Government in the matter of allowing our representation to go before the Tariff Board, which unfortunately has been barred for the present, owing to the Boards being too much pre-occupied with the far more important inquiries into the steel and the derivative industries, as per Government of India's letter No. 6072 of October last, shown to you.

The latest newspaper reports even go to show that the import position is far from improving yet. A cutting from the " Advocate of India's Market Report " of 11th instant is enclosed herein which says " Magnesium Chloride's Home quotation is £3 per ton (which is equal to about Rs. 2-12-0 per cwt." Bombay godown delivery) and large orders are booked at that rate.

This is enough to scare us still more inasmuch as that unless immediate steps are taken to bar new entries, the days of our indigenous and young industry are numbered, and it is only a matter of days and months when we will be perhaps shut out for ever.

Under the circumstances, we can only appeal to you, Sir, to protect our interests, if at all you think them worth preserving, and we fully trust that now that the Tariff Board is actually meeting for the first time in Bombay to-morrow, every effort will be made to have our case investigated on its own merits and some urgent necessary steps taken before it be too late or we are wiped out.

Re *Royalty agreement with Government and last year's accounts.*

As it is a long, long time since we heard in the matter we shall esteem it a greater favour, if you would kindly oblige us by stating when it is going to be finally settled so that we may shape our course accordingly. Awaiting the favour of a line in reply at early convenience.

Statement III.—Copy of letter from the Pioneer Magnesia Works, dated the 28th April 1924, to the Government of India in the Commerce Department.

In continuation of our registered letter, dated 12th October last, forwarding our application for protection to be extended to this industry, we have the honour to send herewith a further supplementary statement for submission before the Tariff Board.

We shall be glad to give oral evidence also as required in support of our case whenever called upon to do so by the Board.

APPENDIX I (TO STATEMENT III).

Figures of Foreign Imports and Kharaghoda Sales during 1923-24 as under.
Foreign Imports from Official Customs Returns, 1923-24.

Months.	Tons.	Import value Rupees.	Average import price per cwt. (exclusive of duty and other charges).	Kharaghoda January to 1923 tons about	Sales December Gross Realisation about
			Rs. A. P.		Rs.
April	858	55,345	3 3 6	45	4,709
May	623	37,737	3 0 0	55	8,985
June	635	35,403	2 12 6	30	3,068
July	115	8,326	3 10 0	4	306
August	40	3,346	4 2 6	4	335
September	25	807	1 13 0	32	2,801
October	67	4,649	3 7 6	15	1,337
November	53	2,556	2 6 9	18	1,530
December	88	5,874	3 5 9	15	1,348
January	436	22,754	9 9	13	1,051
February	466	24,670	2 10 3	40	3,333
March	not available yet.			28	2,450
Total (for 11 months)	3,406	2,01,561	2 15 3 per cwt. average.	328	31 253

NOTE.—(*a*) Out of 3,406 tons, Germany exported 3,246 tons at an average of Rs. 2-12-3 per cwt. c.i.f. Bombay, the rest being all from the United Kingdom at an approximate cost of Rs. 6-15-3 per cwt.

(*b*) Owing to large stocks and no sales to speak of during 1923, the Pioneer Magnesia Works had to shut down their works and consequently there has been no new production either during the past year or up to now.

(*c*) Out of 329 tons sould from Kharaghoda in 1923 the share of Bombay is practically *nil*, the whole quantity being mostly sold in Ahmedabad.

(*d*) The following statement of sales received from the Company's Selling Agents, Messrs. H. M. Mehta & Co., of 123, Esplanade Road, Fort, Bombay.

shows how poor the response from Bombay has been in spite of the considerable sacrifices in rates suffered by the Pioneer Magnesia Works.

1923-1924.

Date.	Party's name.		Rates for Mill delivery.	Amount.
		Cwts. qrs. lbs.	Rs. A. P. per cwt.	Rs. A. P.
20th December 1923 .	Sitaram Mills . .	7 1 0	3 8 0	25 6 0
23rd December 1923 .	Planet Mills . . .	26 1 9	3 8 0	92 2 0
24th December 1923 .	Kalyan Mull Mills .	13 3 0	3 8 0	48 2 0
29th December 1923 .	Bombay United Mills .	26 3 26	3 12 0	101 3 0
15th January 1924 . .	Planet Mills . . .	26 3 0	3 8 0	93 10 0
25th January 1924 . .	Bombay United Mills .	13 2 18	3 8 0	47 13 0
30th January 1924 . .	Dr. E. S. Mody . .	20 1 3	3 8 0	71 3 0
12th February 1924 .	Hatim Mills . . .	34 0 14	3 8 0	164 7 0
29th February 1924 .	Mohsim Mills . .	6 3 25	3 8 0	24 6 6
8th March 1924 . .	Kalyan Mull Mills .	26 2 10	3 8 0	93 1 0
17th March 1924 . .	Ditto . .	27 2 6	3 8 0	96 7 0
27th March 1924 . .	Victoria Mills . .	14 0 0	3 8 0	49 0 0
27th March 1924 . .	Bombay United Mills .	28 0 0	3 10 0	101 8 0
28th March 1924 .	Planet Mills . . .	12 3 27	3 8 0	45 7 6
	TOTAL .	282 0 26	Less selling cost, 5 %	1,053 12 0 52 11 0
				1,001 1 0
Less Railway freights and other handling charges in Bombay up to Godown and for Mills delivery.				368 11 0
				632 6 0

= Rs 2-3-10 per cwt. net realisation in Bombay.

APPENDIX II.

Table of Royalty, Labour Charges and Railway Freights paid during the calendar year 1923 are:—

1923.

Royalty.	Wages and other charges.	Railway freights and handling charges.	TOTAL.
Rs.	Rs.	Rs.	Rs.
nil.	3,917	2,136	6,053

APPENDIX III.

Statement of detailed expenditure incurred by the Company in 1923 as per audited Balance Sheet for the year ending 31st December 1923.

Items.	Rs.	
1. Government Royalty (on profit sharing basis according to new agreement) . . .	...	
2. Bitterns Extraction and Storage 3. Factory charges 4. Motor Rail wagon 5. Fuel . . .	3,917	
6. Drums and Packing	7,365	
7. Railway and other handling charges . .	2,136	
8. Establishment and Sundry charges . . .	4,120	
9. Rents and taxes	715	
10. Travelling charges	380	
11. Allowances	3,000	
12. Bombay office charges	893	
13. Insurances	...	
14. Selling Commission, discounts, weight allowances, etc.	1,915	
15. Interest charges	8,190	
16. Depreciation on Buildings, Plant and Machinery according to Government Schedule .	11,844	Gross Revenue
TOTAL .	44,580	Rs. 31,253

NOTE.—There has been no new production for nearly two years besides the sales were also extremely poor during 1923, being only about 329 tons=6,580 cwts. on which the total expenditure incurred, *viz.*, Rs. 44,580 becomes extremely heavy, giving an average cost of nearly Rs. 6-12-6 per cwt.

There is small wonder, therefore, that the Company has during the past year suffered a heavy trading loss of nearly Rs. 27,000 and the prospects for the current year 1924 are also very gloomy and are expected to result in further serious loss, in spite of the fact that most of the Company's establishment at Kharaghoda as well as in Bombay and Ahmedabad has for the time being been broken up, and the chemist as well as other supervision staff dismissed to cut down all overhead charges to a minimum.

APPENDIX IV.

The stocks of foreign Magnesium chloride in Bombay yet seem to be plentiful and the rates sufficiently low being somewhere in the vicinity of Rs. 3-8 to Rs. 3-12 per cwt. f.o.r. Bombay, and the present German quotations appear to be between £3-10 and £4 per ton (c.i.f. Bombay).

The Pioneer Magnesia Works have under these circumstances recently submitted an application to the Bombay, Baroda and Central India Railway Company to reduce their carrying rates to Bombay if possible in order to enable the Company to re-enter the Bombay Market. But it must be noted that without adequate protection in the shape of a Dumping Duty on the foreign stuff entering here, the position of the local industry is very precarious.

Besides whatever steps are to be taken should be taken soon, otherwise the chances of recovery for the indigenous industry would be getting more and more remote and taking advantage of this position, Germany will be able to dump her products more and more on this country.

Statement IV.—Replies to questionnaire received from The Pioneer Magnesia Works, Ahmedabad, dated 16th June 1924.

We have the honour to acknowledge receipt of your office No. 414, dated the 23rd May 1924, together with enclosures.

Our reply to the questionnaire, with five spare copies, is sent with this letter, and we have also enclosed herewith five copies of a journal "Magnesium Chloride Manufacture and the Pioneer Magnesia Works" which contains some interesting information in connection with the manufacture of Magnesium Chloride at our Works.

We have tried to place before you in as clear a manner as possible, the details of the whole case in our two previous representations and also in our reply to the questionnaire. If, however, you consider it desirable that our representative should be examined before the Board in Simla we shall be only too pleased to abide by your wishes on hearing from you even by a telegram.

THE MAGNESIUM CHLORIDE INDUSTRY.

Introductory.

Q. 1. Our firm, The Pioneer Magnesia Works, was established in the year 1915 A.D. It is an unregistered private firm.

Q. 2. The whole capital of our firm is held by Indians. There are three Indians in the superior management of the firm.

Q. 3. Our firm manufactures Magnesium Chloride as well as Refined Salt.

Q. 4. Our Works commenced to manufacture Magnesium Chloride in 1915 A.D. in the month of September.

Q. 5. The full capacity of our Works as at present equipped for the manufacture of Magnesium Chloride is 4,000 tons per year.

Q. 6. Output of Magnesium Chloride in our Works has been as under:—

Year.	Output in Tons.
1915	...
1916	966
1917	1,145
1918	1,845
1919	1,822
1920	1,477
1921	851
1922	1,353
1923	*Nil.*

Q. 7. Our Works are situated on the Kharaghoda Government Pritchard Salt Works in the Viramgam District.

(*a*) Our Works are situated advantageously in respect of the vicinity of the areas from which principal raw material, *viz.*, Bitterns is drawn.

(*b*) There are no coalfields or other sources of power or fuel near our Works.

(*c*) Our Works are advantageously situated in respect of an important market, namely, Ahmedabad, which is only 60 miles from Kharaghoda.

(*d*) Our Works are not very advantageously situated, in respect of the abundant labour supply.

The most important factor in selecting the site of a Works for the manufacture of Magnesium Chloride is the vicinity of the source of raw material, *viz.*, Bitterns.

Q. 8. Our Magnesium Chloride is equal in quality to the imported stuff but our Magnesium Chloride is not as white as the imported stuff. Ours being a little greyish in colour. We do not realise the same price for our Magnesium Chloride as is realised for the imported stuff because of the prejudice against Indian goods.

Q. 9. Magnesium Chloride is principally used for sizing purposes in the Textile Mills.

Q. 10. The production of Magnesium Chloride at our Works is limited to certain months of the year; the raw product being not available throughout the year. For this reason we have to store up raw materials as well as finished goods to meet the demand for the rest of the year; this increases cost of production by locking up the capital. The limited consumption of our goods owing to foreign competition would not justify working the factory throughout the year, which fact also contributes to the increase of cost of production.

II. Raw Materials.

Q. 11. The raw material used in our Works is Bitterns, residual mother liquor of salt.

Q. 12. The annual requirements of the raw material, if the factory were worked to its full capacity, would be nearly ten thousand tons of the Bitterns.

Q. 13. Approximately 2½ tons of Bitterns is required to manufacture one ton of Magnesium Chloride.

Q. 14. Bitterns is drawn from Government Salt Works, situated at a distance of 2 to 5 miles.

Q. 15. Bitterns is collected by manual labour and transported to the factory by means of a rail motor wagon.

Q. 16. From 1915 to 1923 we paid a royalty at the rate of Re. 1-8-0 to the Government on the manufactured goods, but since 1923 the amount of royalty is made dependent upon the net profit made.

Q. 17. The cost per ton of the raw material, *viz.*, Bitterns is Rs. 2-8-0 per ton as shown below in detail, exclusive of the royalty which is payable on the finished goods and not on the raw materials.

Year.	Labour.	(Transport Freight.)	Miscellaneous.
	Rs. A. P.	Rs. A. P.	Rs. A. P
1916 .	1 14 0	0 6 0	0 4 0
1918 .	.....	.....	.....
1921 .	.....	.....	.....

Q. 18. Copies of the agreement for royalty are enclosed herewith. The terms are now favourable.

Q. 19. We have not to import any raw material.

Q. 20. We have not to use any chemicals in the manufacture of Magnesium Chloride.

Q. 21. Questions of special freight rate for raw material by rail or sea does not arise in our case.

III. Labour.

Q. 22. No expert supervision involving the employment of foreign skilled labour is required in the process of manufacturing Magnesium Chloride.

Q. 23. No imported labour is used at present and none would be required to be used, if the factory were to work to its full capacity.

Qs. 24 and 25. These questions do not rise in our case.

Q. 26. We utilise all Indian labour in our factory.

Q. 27. The total wages bills for different years run as under:—

Year.	Amount of bill in Rupees for the labour.
1916	20,277
1918	16,736
1921	10,875
1923	...

Q. 28. The Indian labour force is sufficient for our works, and it is drawn from the vicinity of the Works.

Q. 29. We have found that the Indian labourer improves with training.

Q. 30. We have erected special quarters for the labourers.

IV. Power (including Fuel).

Q. 31. The power used in the Works is derived from steam.

Q. 32. Coal and firewood, both are employed as fuel. Firewood can be obtained in sufficient quantities for our purposes.

Q. 33. Half a ton of firewood is required for every ton of finished product (Magnesium Chloride).

Q. 34. Firewood which is the principal fuel is brought from a distance of 100 miles. Coal is obtainable at its source at Rs. 9 per ton. Firewood is obtainable at the rate of Rs. 25 per ton. The freight per ton of coal is approximately Rs. 20 and per ton of firewood is Rs. 3-12-0.

Q. 35. We do not own or control our sources of fuel.

Q. 36. We have obtained no concession for wood, which is our principal fuel.

V. Market.

Q. 37. There are only two factories manufacturing Magnesium Chloride. We manufacture the bulk of it and our production for various years is as under:—

Year.	Output of Magnesium Chloride in Tons.
1916	966
1917	1,145
1918	1,845
1919	1,822
1920	1,477
1921	851
1922	1,353
1923	...

Q. 38. The total demand for Magnesium Chloride in India is from 3,500 to 4,000 tons.

Q. 39. The increase of demand for Magnesium Chloride depends upon the increase of textile manufacture in India.

Q. 40. The principal markets for Magnesium Chloride are Ahmedabad and Bombay, the former being at a distance of 60 miles and the latter 360 miles from our Works at Kharaghoda.

Q. 41. There are no markets in India in which owing to their distance from the ports, we can more easily compete against the foreign manufacturer.

Q. 42. Export of Magnesium Chloride from India to foreign countries is not probable.

VI. Foreign Competition.

Q. 43. Germany is the chief foreign country from which competition in the Indian markets is the keenest.

Q. 44. In Germany Magnesium Chloride is manufactured from Carnallite found in the Stassfort deposits.

Q. 45. The manufacture of Magnesium Chloride in Germany is as a waste bye-product of valuable potassium salts, while we have to manufacture it as the chief product.

Q. 46. The process of manufacture in India and in Germany is mainly the same but in Germany the manufacturers have an advantage that they recover potassium and other salts, thus reducing the cost of manufacturing Magnesium Chloride.

Q. 47. The following are the rates exclusive of duty for the imported Magnesium Chloride: —

Year.	Rate (exclusive of duty) per cwt. in rupees.
	Rs. A. P.
1914-15	5 8 0
1915-16	13 15 0
1916-17	13 3 0
1917-18	12 5 0
1918-19	Not available.
1919-20	13 6 6
1921-22	9 10 0
1922-23	5 6 6

Q. 48. The above prices are quoted from Government Trade Reports.

Q. 49. Magnesium Chloride is manufactured as a waste bye-product in Germany, and it is carried as ballast on boats to Indian ports. Hence they have a big margin of profits.

Q. 50. Foreign competition is keenest in the Bombay market.

Q. 51. The exceptional low prices at which German Magnesium Chloride has entered India since war is due to the favourable exchange to Germany.

Q. 52. We are not in possession of actual figures for freight by sea for foreign Magnesium, but this commodity is usually carried on boats as ballast.

Q. 53. Bombay is the chief market, and it being a port, the imported stuff has nothing to pay by way of railway freight.

Q. 54. We have no instances to our knowledge in which Continental Magnesium Chloride has been re-exported from the United Kingdom at British manufacture.

Q. 55. The foreign manufacturers have an advantage over Indian manufacturers, as Magnesium Chloride with former is a waste bye-products of potassium salts, and is easily collected and does not require any treatment by means of any special plant or machinery.

Q. 56. Though none of the disadvantages mentioned in Question 55 can be regarded as temporary, protection of the indegenous industry for a reasonable length of time, say 10 years, under the past war normal condition should enable us to hold our own against foreign competition.

VII. Equipment.

Q. 57. Our Works are sufficiently large as an economic unit of production. The smallest economic unit of production would be 500 tons.

Q. 58. The manufacture of Magnesium Chloride does not require the use of elaborate and expensive machinery.

Q. 59. About 63 per cent. of the total capital outlay has been incurred on plant and machinery.

Q. 60. We enclose herewith a copy of the pamphlet on Magnesium Chloride and the Pioneer Magnesia Works, wherein on page 440, a brief description of the plant and process of manufacture is given.

Q. 61. Our machinery and other equipment and also the process of manufacture are sufficiently up-to-date and efficient to enable us to compete successfully against the foreign manufacture.

Q. 62. In 1916 we erected our Works at Kharaghoda and later new special flues for burning purposes according to the instructions of the Technical Government Department were constructed. According to the instructions of the Department of Industries a new experimental plant was erected at our Works to economise fuel consumption, but it was afterwards found that our method was the most economical.

Q. 63. Excepting the boiler and the steam engine and the conveying pipes, the other parts of the plant are manufactured in India.

VIII. Capital Account.

Q. 64. Block value of our property as it stood at the end of 1923 is as under:—

	Rs.	A.	P.
(*a*) Buildings	42,613	2	0
(*b*) Plant and Machinery	90,364	13	9
Miscellaneous	8,829	0	0
	1,41,906	15	9

Q. 65. The figures given in answer to Question 64 represent the actual cost of the various assets. The total depreciation accumulated amounts to Rs. 23,000.

Q. 66. The sums actually set aside for depreciation since manufacture commenced, are practically equal to the sums that ought to have been set aside for actual depreciation.

Q. 67. The cost of erecting a new Works with the same capacity of output, would be practically the same as we have incurred.

Qs. 68, 69, 70, 71, 72, 73, 74 and 75 do not arise in our case, since ours is a private firm.

IX. Cost of Production.

Qs. 76, 91, 92, 93 and 94.

Detailed statement showing actual annual expenditure incurred by the Pioneer Magnesia Works on Magnesium Chloride manufacture at Kharaghoda according to their Books of Account from 1916 to 1922.

Comparative statement of working costs from 1916 onwards.

Serial No.	Item.	1916.	1917.	1918.	1919.	1920.	1921.	1922.
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1	Royalty . . .	31,847	38,006	55,741	47,296	33,557	33,772	14,874
2	Bitterns extraction and storage.	3,775	6,083	19,845	16,914	9,694	3,673	5,618
3	Factory charges .	20,277	8,032	16,736	18,561	11,548	10,875	9,309
4	Motor Rail Wagon .	..	..	..	..	..	..	2,661
5	Fuel . . .	4,067	14,220	39,830	23,949	17,691	15,103	12,938
6	Drums and Packing .	10,896	20,440	48,588	38,298	28,606	35,913	16,605
7	Railway charges .	10,690	10,025	13,591	10,721	7,589	12,500	5,118
8	Transport and handling charges.	3,157	5,915	7,286	8,536	6,039	7,485	3,138
9	Sundries . . .	848	2,720	2,596	5,290	2,084	2,294	1,500
10	Rents and Taxes .	1,498	278	425	1,561	2,289	2,213	1,463
11	Travelling . .	726	580	1,258	936	611	1,245	1,191
12	Establishments, allowances, etc.	6,681	9,535	17,915	5,910	5,275	12,141	6,377
13	Bad debts . .	280	1,606	2,310	239	59	1,144	..
14	Insurance charges .	..	..	..	..	..	..	360
15	Interests . .	3,124	2,807	2,385	2,951	3,437	5,514	8,046
16	Selling expenses, Commission discounts, shortages, etc.	20,340	19,579	39,806	31,370	16,468	20,864	9,803
17	Depreciation . .	5,957	14,268	15,000	22,813	24,933	24,000	11,844
18	Income Tax . .	1,625	2,645	5,572	23,566	16,114	18,907	..
	Total .	1,13,107	1,53,228	2,00,888	2,64,499	1,88,344	2,07,646	1,10,845

Statement of actual working costs of Magnesium Chloride per cwt. f.o.r. Kharaghoda based on annual production, at the factory from 1916 to 1922, as seen from the Pioneer Magnesia Works' Books of Account. These are exclu-

sive of railway freights, handling charges, selling commission, depreciation and income-tax payments which would all have to be counted extra.

Years.	Sales.	Productions.	Total annual working costs as above f. o. r. Kharaghoda.	Average cost of production without other charges shown above per cwt. f. o. r. Kharaghoda.
	Cwts.	Cwts.		Rs. A. P.
1916 . . .	16,762	19,327	71,329	3 11 0
1917 . . .	23,610	22,896	1,00,796	4 6 6
1918 . . .	38,403	36,903	2,10,633	5 11 3
1919 . . .	32,950	36,434	1,67,263	4 9 6
1920 . . .	23,468	29,542	1,17,201	4 0 0
1921 . . .	21,979	17,034	1,23,890	7 4 3
1922 . . .	14,698	27,059	80,942	3 0 0
	171,870	189,195	8,72,254	4 9 9

N.B.—(1) The reason why the expense in 1921 is so high is because in that year the production was exceptionally low.

(2) The average cost per cwt. of Rs. 4-9-9 f.o.r. Kharaghoda as shown above can be roughly explained as under:—

	Rs. A. P.
Factory and fuel costs (about)	1 2 0
Government royalty	1 8 0
Drums and packing	1 2 0
Interest, establishment and all other sundry charges excepting those mentioned on top .	0 13 9
	4 9 9 per ton

(3) Up to the year 1921 royalty remained fixed at Re. 1-8 a cwt. irrespective of whether the price realised was higher or lower.

It will be noticed that the royalty to Government has up to now worked out on an average to nearly ⅓rd of the cost of production, which is rather prohibitive.

Q. 77. The cost of production increased in 1921 owing to the production being exceptionally low.

Q. 81. The rates of depreciation allowed by the income-tax authorities are proper.

Qs. 82, 83. About Rs. 11,800 are required annually for depreciation at income-tax rate on the total block accounts.

Q. 85. The Company requires a working capital of 1½ lakhs to 2 lakhs of rupees.

Q. 86. Most of the working capital is provided by the principal partner Sardar Sir Rustomji Jehangir Vakil.

Q. 87. The rate of interest for the borrowed capital is 8 per cent.

Q. 89. The average value of the stocks of finished goods held by the Company is about Rs. 50,000 usually 4 months elapse between production and payment.

X. Manufacturer's Profits.

Qs. 95, 96, 97, 98. These questions do not arise in our case, as ours is a private firm.

XI. Claim for Protection.

Q. 99. A. We claim that the industry possess natural advantages such as an abundant supply of raw material, *viz.*, Bitterns because it can be had within a distance of 2 to 5 miles from the factory in large amounts as a residual mother liquor of salt.

B. Owing to the depreciated exchanges and the recovery of the Magnesium Chloride as a bye-product in Germany the industry is not likely to develop without the help of protection.

C. We do claim that the industry will eventually be able to face world competition.

Q. 100. A. Our industry is one in which the advantages of large scale production can be achieved and that increasing output would mean increasing economy of production.

B. It is probable that in course of time the whole needs of the country could be supplied by the Home production.

Q. 101. Heavy sized textile goods cannot be manufactured without Magnesium Chloride. It used to be imported from Germany till the beginning of war. In case there is no home industry developed, the prices might be inflated at any time by the German manufacturers. Again Bromine can be recovered from the Bitterns and it would be very useful for chemical industry and medical preparations and hence the industry is of importance on national grounds also.

Q. 102. The industry is peculiarly suitable to Indian economic conditions as the bitterns (from which Magnesium Chloride is manufactured) can be had as a bye-product of Government Salt Works.

Qs. 103, 104 and 105. (1) The protection offered to the industry by way of customs duty on the imported stuff, is practically negligible owing to the low price of foreign Magnesium Chloride.

(2) Protection offered to our industry by way of transport charges between the country of production and the port of entry, is rather negative, *i.e.*, to say the foreign manufacturer is at an advantage in that respect.

The amount of protection which we consider necessary for our industry is to levy a duty of at least Re. 1-8-0 per cwt. (*i.e.*, about 50 per cent. *ad valorem* duty according to present rates) on the foreign imported Magnesium Chloride.

Q. 106. On the basis of 20*s* to 24*s* warp × 30*s* to 36*s* weft of yarn used in a mill and taking an average of 100 size per lb. of yarn (which is altogether a very high percentage to take for all India), it appears that less than ½ lb. of size is used on every 1 lb. of cloth woven. The average approximate cost per lb. of size mixing in a mill at the present day prices (Magnesium Chloride at Rs. 3-12-0 per cwt.) would roughly amount to 2¼ as. of which the proportion of Magnesium Chloride is only about 1/24th of 30 pies, *i.e.*, 1 to 1¼ pies per lb. of size used.

In other words the total cost of Magnesium Chloride per lb. of cloth woven cannot be more than ¼ pie at the very highest computation which is altogether negligible (and the increase owing to protection duty would be more negligible still) and the millowner's arguments of increase in costs would fall to the ground in view of the other important negative advantages accruing to the country by the continuance of the industry in India.